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Abortion with Dwarf Embryos.

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THE writer has before him at the moment four specimens of abortion sacs from about the same period of pregnancy. The first is a chorionic vesicle partly invested in the decidua reflexa and partly showing the arborescent villi covering the external surface. The embryo is normal in form and proportionate in size to the chorion; and altogether the specimen has the characters of a healthy ovum suddenly expelled from the uterus through the action of some cause external to itself. It is from a patient, the subject of cardiac valvular disease, who aborted immediately after a fright, which caused her severe "palpitation."

The second specimen is an ovoid sac, with walls which in most places are an inch in thickness, of decided and fairly uniform density, and showing general effusion of blood into and between the decidua, but no circumscribed hæmorrhages. The embryo is not out of proportion to the size of the chorion, and all the appearances are suggestive of slowly occurring changes in the envelopes. It is from a patient suffering from pelvic inflammatory disease.

The third specimen in the fresh state was of a boggy or spongy consistence, a thick-walled sac lined by a large chorion in which no trace of embryo or its place of attachment could be found. When gently separated the chorion was seen to be covered by small, clear vesicles. It is a hydatidiform mole in an early stage of development.

The fourth specimen is a mass of decidua and blood-clot. The hæmorrhages are obviously recent, and they form bulging prominences on the wall of the contained cavity. The chorion has reached the size proper to about the seventh week of pregnancy, but the embryo, which at this age should have measured 20 mm., was only 1·8 mm. in length.

When seen in the condition in which the products of abortion usually come into the hands of the practitioner all four specimens to casual observation looked much alike; but when they are set out for exhibition purposes they are so different one from another that they

might be regarded as distinctive types. Of types of abortion sacs recognizable by the naked eye and corresponding to an etiological classification we are not, however, in a position to speak. An attentive examination, nevertheless, without resort to elaborate pathological procedure, will very often put the practitioner on a fruitful line of enquiry as to the causation in particular cases. As he grows in experience he will find fewer and fewer instances of miscarriage which he must be content to ascribe to such antecedents as ordinary physical effort on the part of the patient, the lifting of weights or other exigencies of household work, occurrences, which being incidents in the daily life of all pregnant women, are not in themselves efficient causes of abortion, although on occasion they may be factors in the causation. In particular will this unsatisfactory group be restricted in its content by the exclusion from it of abortions of a certain type—using the term loosely—of which the fourth specimen above mentioned is an example.

The type is frequently met with. Abortion occurs in the period from the sixth to the ninth week. The sac shows recent hæmorrhages into the decidua, not to be confounded with adherent blood-clot. The embryo is almost always undiscovered. If the sac has ruptured during expulsion it is concluded that the embryo has escaped; and if the stump of the cord is seen this is taken as proof of the correctness of the conclusion, although there is reason to believe that the assumption is not fully warranted. If the sac is unruptured it is found to contain only the liquor amnii, there being no embryo. In rarer cases an embryo is found, but one so small that it may readily be concealed by a fold of the membranes.

The writer has obtained from his own practice and from friends five, possibly six, of these dwarf embryos, and has studied them in serial sections. From the results of the examination it is proposed to adduce evidence in support of these propositions: (1) that the causation of the phenomenon is to be sought for in malnutrition of the ovum or embryo, probably dependent on abnormal states of the maternal blood; and (2) that abortions with dwarf embryos and many abortion sacs in which no embryo is found, including at least some of the so-called blood-moles are members of the same order.

The material submitted to investigation consisted of the following, giving it in the order in which it was obtained:—

A, a malformed embryo aborted nine weeks after the termination of the last menstrual period. Duration of the pregnancy not less than five weeks, if suppression of the menses was due to no other cause. Developmental characters of the ovum, namely, obliteration of the extra-embryonic cœlom, and length of the stalk of the umbilical vesicle—about a centimetre—belong to the beginning of the second month. An embryo of five weeks measures about 12 mm. This one measured 2·6 mm. It was therefore dwarfed in size; and it

was also malformed. There were no traces of limb buds, of facial processes, or of a vascular system. Branchial clefts were only faintly indicated. The optic vesicles were formed, but not the lens pits; the auditory vesicles were completely enclosed; there were a single olfactory pit, and a single Wolffian ridge. The reproductive history of the patient is recounted later.

B, a damaged embryo 2·8 mm. in length, found among blood-clot and decidual shreds sent for examination by Dr. Chalmers, Crocketford, Dumfries, from a patient who for months before had been suffering from uterine hæmorrhages occurring about fortnightly. This is a doubtful case. The sequence of the serial sections was lost, many of them fell to pieces, and the specimen is included in the series only on the ground that the available sections present the same cytological characters as do those of the other embryos.

C, an embryo from the same patient as A with the developmental features of the fourth week. Last menses October 7—19, continuing 12 days; uterine hæmorrhage beginning December 14, abortion completed December 17; duration of amenorrhœa 55 days. External dimensions of chorionic vesicle, including decidua reflexa, 2·6 × 2·3 centimetres; length of embryo 6·3 millimetres.

D, a malformed embryo 4·7 mm. in length. The patient's first confinement on September 21 1907; suckling for three or four weeks; first menses thereafter January 20 1908; amenorrhœa till abortion on April 17 of the same year. Dimensions of chorionic cavity 8 × 5 centimetres; extra-embryonic cœlom obliterated; amniotic fluid collected to 20 cubic centimetres with some loss.

E, a malformed embryo 1·8 mm. in length, from a case of Dr. Jane Boyes, Rutherglen. The patient, aged 30 years, had had four normal pregnancies, and possibly a miscarriage between the first and second of these; last menses in February during lactation; weaning of infant in April; abortion May 3 1909. Chorionic cavity approximately 5 × 2·5 centimetres; extra-embryonic cœlom obliterated.

F, a grossly malformed embryo 5 mm. in length found detached in the amniotic cavity. Patient, aged 44 years; first conception, according to her own clear and intelligent account, ended at the full term of pregnancy with the artificial delivery of a mole, about the size of a "kidney potato." Thereafter six normal confinements, a miscarriage at 2½ months, and the birth of a seventh live child two years ago. Menstruation irregular of late; abortion March 18 1912, after a period of amenorrhœa believed to have extended to six or seven weeks. Chorionic vesicle 4·5 × 1·5 centimetres.

The umbilical vesicle of Embryo A was flattened out into the form which this organ finally attains. It measured 3·5 × 2 mm., and was thus larger than the embryo, to which it was attached through the umbilical cord at a distance of about a centimetre. This relationship is in itself sufficient to establish the fact of dwarfism of the embryo.

When the abdominal somatopleure is examined parts of it are found to present a normal, healthy appearance. On one face of the wall a single layer of somewhat cubical cells with clearly-defined oval nuclei, is sharply marked off from the adjacent tissue. It is the well-preserved ectoderm, which is equally well preserved all over the body surface. On the other face is another distinct layer of cells, the beginnings of the endothelium of the peritoneum. The intervening tissue is formed as usual of cells with round or oval nuclei which stand well apart from one another, but are interconnected by processes of their cytoplasm. In the midst of this normal mesoderm may be seen nuclei (Fig. 1), half or even a quarter the size of the others, but more deeply stained because of the concentration or excess of their chromatin (hyperchromatosis). This is the beginning of a change the later stages of which may be observed again and again throughout the sections. The small, deeply-staining nuclei become more and more numerous till in places they entirely supplant or obscure the normal ones. With their increase in number there is no corresponding increase of the cytoplasm; they lie close together, and there is no expansion of the tissue commensurate with the nuclear proliferation (Fig. 2).

The hyperchromatic nuclei do not remain long in their first state. Along with the nuclei of the normal cells they become irregular in contour, nodular or angular. Then they fall to pieces and there are patches consisting only of amorphous debris with scattered particles of chromatin (karyorrhexis) (Fig. 5). These changes begin and are carried out in the mesoderm. In immediate contact with areas of greatest degeneration the ectoderm is intact and apparently healthy.

Another phenomenon of the pathological process is the invasion of the body cavities and hollow organs by the abnormal cells. This takes place sometimes by the invaders forcing their way *en masse* into a cavity; sometimes by individual cells penetrating between the entodermic or ectodermic elements and loosening them from their attachments (Figs. 3 & 4). That these loosened cells subsequently disappear is evident from some structures being represented only by remnants of their specialized elements embedded in the pathological tissue. The disappearance does not take place always in the same way. At times there is solution of the chromatin, as evidenced by the pale, shadowy, nuclear framework, or by the diffuse spread of the nuclear stain into the cytoplasm. At times there is concentration of the chromatin so that the nucleus resembles that of the abnormal mesodermic cell. By the latter mode of degeneration of their proper elements probably originate a proportion of the small round cells which occupy the cavities of such organs as the cerebral or optic vesicles.

Not a trace of a vascular system can be found throughout the embryo or its enclosing membranes. A speciality of the case is the large saccular allantois, the hollow stalk of which can be traced

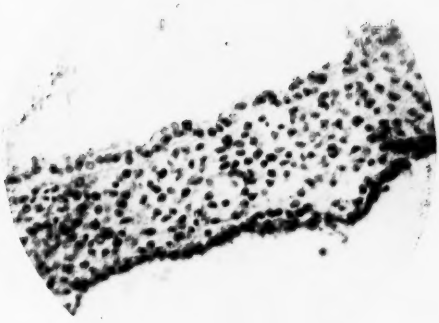

Fig I.

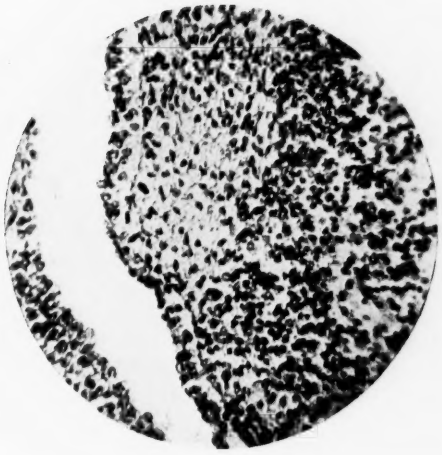

Fig. II.

through the cord to near the umbilicus, where the cord becomes solid. This allantoic vesicle made contact with a considerable extent of the chorion, but could be easily detached. The chorion, which is in excellent preservation, has formed its villi with their mesodermic cores and epithelial covering, but these have not become vascularized.

In Embryo E, maldevelopment has left few traces of normal features (Fig. 6). Externally a slight prominence beneath the front of the cephalic end occupies the position of the early heart. Beneath this there is a globular protuberance, which appears to represent a yolk sac that has been but slightly constricted off from the body, yet over it has grown the amnion, enclosing it and the abdominal stalk with which it has fused. In conformity with this view as to the nature of the protuberance no umbilical vesicle is found. Of other external features, such as visceral arches or limb buds, there are no indications; evidence probably of the earliness of the departure from the normal course of development. Internally the pathological changes have left little more than the cerebral dilatation of the neural canal, and the entodermic lining of the allantoic vesicle. By other than embryonic characters, however, the duration of the life of the ovum is indicated. The extent of the chorion and the expansion of the amnion into contact with it point to an age for the embryo with which its minute size is not in agreement.

Histologically, the specimen represents a more advanced stage of the same pathological process as that which is seen in Embryo A. Whereas in Embryo A the morbid changes in the tissues are scattered and patchy in distribution, here they are dominant and widespread. Areas of perfectly normal mesoderm remain, but for the most part the body of the embryo is made up of small round cells. Throughout considerable masses of these the nuclei retain their sharp and even contour. In other masses karyorrhexis is prominent, but of total disintegration of cells there is very little. Only vestiges of the neural canal and entoderm of the body survive. The cellular elements of these are in fair condition; but, on the other hand, the entodermic lining of the allantois is much degenerated, although still forming a conspicuous feature of the abdominal stalk. Of the surface ectoderm the cell outlines and nuclei are well defined. The chorion is in excellent preservation, but only a few villi are found, and there are no blood channels.

Embryo D was a somewhat kidney-shaped body, from the " hilus " of which proceeded the short, thick umbilical cord. Cephalic and caudal ends were recognizable; there was a slight prominence in the heart region, and some slight modelling of the facial surface. Otherwise the external form was featureless. Internally the only trace of organization was what appeared to be one of the auditory vesicles, a circular layer of epithelial cells arranged around a lumen. That there had been laid down the foundations of organs

which were subsequently destroyed is to be inferred from what can be seen to be taking place in the embryos previously described. But that external features like visceral arches and limb buds should have been removed without leaving a vestige is hardly to be thought of. Rather the simplicity of the outward form is to be taken as a token of the early entrance of the embryo into the morbid state, a state in which there was not only maldevelopment but retarded growth, for the size falls far short of what the age indications require. These indications are the expansion of the amnion into complete contact with the chorion, and its having attained a capacity of over 20 cubic centimetres, facts which point to at least the middle of the second month of gestation.

Over all the surface the ectoderm looked as if it had been fixed *intra vitam*. In a considerable part of its extent it was formed of several cell strata, as if there had been proliferation to meet a lateral expansion which was due, but which was not requisitioned. Within the ectoderm in some of the sections there was a narrow zone of normal mesoderm. All the rest was a mass of closely-packed small round cells staining deeply. The nuclei at the periphery of the mass were fragmented; not so those in the centre, which, however, had a dead and glassy aspect. The umbilical cord had a fibrillo-cellular structure, and gave the impression that it would outlast the disintegration of the embryo. The chorion was in excellent state, its villi numerous and voluminous, consisting of solid mesodermic cores with epithelial coverings; but there were no blood-vessels, nor were the umbilical vesicle or the allantois discovered.

Embryo F had so little the form of an embryo that it could be identified as such only by an examination of the sections. In these the neural canal is shadowed forth by the grouping of the common type of cell. A superficial layer of flattened cells, sometimes doubtfully stratified, is obviously the ectoderm. Otherwise the sections present the same appearance of crowded round cells, as do those of the preceding embryo. They have, however, more decidedly the aspect of having suffered from decomposition, the ectoderm being less affected in this way than the interior of the mass. The chorion has developed abundant villi, but it is dead and its cells unstainable.

For Embryo B there are no data by which the age may be estimated. The available sections present an appearance exactly similar to many parts of Embryo E, a thin, well-preserved ectoderm enclosing a loose assemblage of small nuclei.

Embryo C has the external appearance of a normal embryo of four weeks, but is less curved than usual and is undersized. The ectoderm is in the condition that would be expected from fixation during tissue life. The central nervous system is distinct, but appears to have undergone necrosis. All the rest is composed of round cells there being no special cell forms in the organs, which

Fig. III.

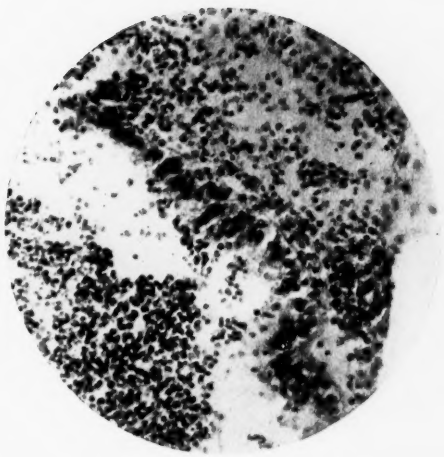

Fig. IV.

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are roughly mapped out by the grouping of the indifferent elements and by the interspaces. Some parts are probably slightly necrotic, but some others were evidently living shortly before fixation. Here the cells can be seen to have a narrow envelope of clear cytoplasm enclosing a small, round nucleus which stains well and naturally. Proliferation of the endothelium of the blood-vessels has partially or entirely filled the lumen with cells of this kind, while the cells which outline the wall have reverted to the same primitive form. The like is true of other tissues, and the condition is evidently the result of vital activity and not of post mortem deterioration. There has been active cell production, the new units remaining unspecialized and the already specialized elements disappearing or reverting to the undifferentiated type.

Human embryos are obtained under such circumstances that post mortem changes in them are always to be expected, and in reality are frequently found. This expectation warns to caution in interpretation, but also may serve to mislead. Biassed by such anticipation an observer examining, for example, Embryo F would be apt to reject the specimen offhand as merely badly "macerated." Maceration or some such non-vital deterioration there has been, but why should the centre of the mass be more affected than the surface? To this question it might be answered, not without reason, that the ectoderm is more resistant to hostile influences than the other tissues. Yet why should the neural involution, a recent derivative of the ectoderm, have lost this quality of resistance? May not the explanation of the better preservation of the surface which is seen in all the embryos rather be because that part has been better served by the only method of nutrition available, namely, imbibition? Another thing in connection with this embryo which is not explainable by post mortem change is the deformation, a deformation which is not wholly the outcome of dead external agencies, gravity or compression, for instance, but is mainly the result of aberrant living processes, a true maldevelopment. Disease, it must be presumed, has preceded and led up to decomposition, and consequently interest centres in the mode of action of the morbid process and the possibility of distinguishing its effects from those of post mortem decay. That some of the phenomena presented by these embryos, hyperchromatosis and karyorrhexis, occur in cells suddenly killed and maintained under sterile conditions is admitted, but they occur also in cells which are only gradually losing their vitality, in necrobiosis. And that it is with necrobiosis and not with simple necrosis that we have here to do is evidenced by (1) malformation, implying the continuance of some degree of vitality; (2) cell proliferation in which the daughter cells do not rise to the plane of the mother cells; and (3) active movement of the new cells into neighbouring parts.

If, then, necrobiosis is the pathology of these embryos the

causation is to be sought in malnutrition. It is a notable fact that in only one of the specimens, embryos and investing membranes alike, are there any traces of a blood vascular system, and in that case the existing vessels have become partially obliterated. Yet it is not to the absence of a vascular system that the presumed malnutrition is to be ascribed. In some of the embryos the deviation from the normal had been entered upon in all probability before the need for a blood circulation had been arrived at; and in no case had the bulk of the embryo put it beyond the reach of nutrition by imbibition. The developing ovum, like other cell complexes, derives its nourishment, in the first instance, from the maternal lymph. It would therefore seem to be in the defective quality of the lymph that the cause of the malnutrition is to be looked for. It does not greatly militate against this that we are not able to point to definite abnormalities of the maternal blood in particular instances of dwarfed and malformed embryos. The chemic variations in this fluid are so many and so subtle that to diagnose them readily or at all is not possible by the means at present at our disposal. That pathologically significant abnormalities of the blood are frequent in pregnancy is generally recognized; and to seek in this direction the causation of some abortions is a procedure that appears worthy of more consideration than is usually accorded it outside the sphere of the graver toxæmias. Illustrative in this respect is the history of two of the above described embryos, A and C, both from the same patient.

Her first confinement was on November 24 1894. It was normal, the child, a male, who is still alive. Her second confinement was on November 25 1895, three weeks before term; the child, a female, being scarcely larger than a six months' fœtus and living for only 32 hours. The placenta was small and pale. Albuminuria was detected two months before labour, and it continued after parturition. Thereafter were born two children at term, who died in infancy, two macerated fœtuses, two abortions, and, finally, on December 23 1904, a male child at term, who is still living. Throughout this time albuminuria, without tube casts or other evidence of destructive renal disease, continued with intermissions both during her pregnancies and in the intervals between. Since her last confinement the patient has been, and still is, in perfect health. Her husband all along has been a strong, healthy man. The family with many collaterals has been under the writer's observation for twenty years, and syphilis, alcoholism and tuberculosis are excluded. The albuminuria is the only fact that can be pointed to as fulfilling the implied etiological condition of variability, and is probably to be taken as indicative of an anomalous blood state. Albuminuria of pregnancy in the writer's experience, which, however, may be exceptional in this respect, is more often detrimental to the infant by enfeebling it than it is to the mother.

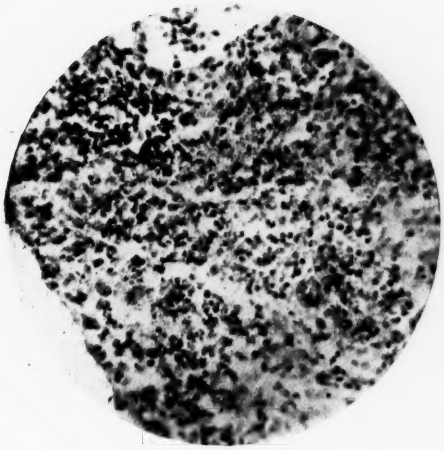

Fig. V.

Fig. VI.

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Embryo E of the series is from a pregnancy in the early period of which cessation of lactation took place. This event, if it was accompanied by a disturbance of the sugar content of the blood, would have an influence on the developing ovum, an influence which might result in an appreciable effect, of itself or through the concurrence of other factors, such as the systemic disturbance of a menstrual epoch. The association of excess sugar in the blood with impaired tissue metabolism is well known, as is also its association in pregnancy with the death of the fœtus. When the symptoms of thirst and polyuria are manifest glycosuria is not overlooked; but it may exist in a mild degree and escape observation. Especially it should be kept in mind in cases of repeated abortion without obvious cause. A patient of the writer's aborted many times in successive pregnancies during the second month, the embryo never being found. It was discovered that she had a small quantity of sugar in the urine for short periods with intervals of freedom. Unfortunately she was lost sight of while observations were being made with a view to determine the relationship between the glycosuria and the habit of abortion. Still there can be little doubt that they were causally connected.

Of the other cases of the series nothing is known of B, except the fact of the recurrent uterine hæmorrhages, while with regard to D and F the patients were apparently healthy, and offered nothing on which even speculation might be based.

One or two others of the findings of this investigation call for brief remark. The degenerated and fragile state of the embryo affords a probable explanation of the occurrence of empty abortion sacs. Had expulsion been postponed for a brief period in any of the cases the embryo would have fallen away from its attachment—one of them had actually done so—and would soon have been completely liquefied. The state of the cord in one instance raises the suggestion also that this part might remain after the embryo had vanished. Then, too, the healthy and evidently living condition of the chorion in all but one of them makes possible the long continuance and even growth of this membrane. Further, the isolated character of the hæmorrhages—which, by the way, are secondary and not primary to the affection,—and the situation of these foreshadow the later stage of the blood-mole. In the writer's view dwarfism of the embryo, some empty abortion sacs, and at least some blood-moles, are of the same order of things.

EXPLANATION OF FIGURES.

Fig. 1. Somatopleure of Embryo A. The mesoderm with normal and hyperchromatic nuclei, the latter very variable in size; the tissue in good preservation.

Fig. 2. Somatopleure of Embryo E. A small patch of the mesoderm normal, the rest crowded with hyperchromatic nuclei.

Fig. 3. Embryo A. Pathological, small, round cells bursting into the neural canal *en masse*.

Fig. 4. Embryo E. The round cells are invading the neural canal individually; the ectodermic elements are being loosened and are degenerating.

Fig. 5. A portion of Embryo A which is on the point of dissolution; granular cell débris with fragments of chromatin and unfragmented hyperchromatic nuclei.

Fig. 6. A complete section of Embryo E through the region of the heart as seen with a low power. Complete disappearance of internal organisation; all cell forms replaced by round cells which occupy the whole area of the section. The outer band is the section of the membranes. The ectoderm, although not distinct with this magnification, is intact.

Death of the Child due to Rupture of Umbilical Vessels during Labour.*

By Herbert Williamson, M.B., F.R.C.P.
(From the Obstetric Department of St. Bartholomew's Hospital.)

Death of the child during labour from hæmorrhage caused by rupture of the umbilical vessels is a rare phenomenon. A normally inserted cord may be torn across when a woman is delivered in the upright position, and similar accidents due to absolute or relative shortness (when during delivery the woman was recumbent) have been observed by Westphalen and Meyer. In most instances, however, where a child has bled to death from rupture of an umbilical vessel during labour the insertion of the cord has been velamentous. I propose to record a case of this kind and to offer a few remarks upon the condition.

Many errors of development of the placenta are of embryological rather than of clinical interest, but velamentous insertion of the cord is an exception, for the life of the child is placed in danger.

Those who have tabulated series of cases state that the insertion of the cord is velamentous in about ·7 per cent. of all human placentæ. Chiari found it in ·4 per cent. of all placenta examined, Lefevre in ·84 per cent., Croom in ·7 per cent., and Ahlfeld in ·9 per cent. In twin pregnancies it is more common; in the Dresden Clinik, under V. Winkel, it was found in 5 per cent. of twin placentæ, but in only ·57 per cent. of single placentæ, and statistics from other clinics confirm this observation. Cases of velamentous insertion of one cord with uniovular twins have been recorded by Valenta, Kuhn, Hüter, Winslew, Kiesel, Ruger and Rücker. Thevenot has described a twin placenta in which the insertion of both cords was velamentous.

I do not intend to enter upon the vexed question as to what errors of development give rise to this abnormal condition or as to why it should be particularly common with uniovular twins. Hubert Peters has critically examined the various suggestions made, and I refer those interested in the question to his paper. It is sufficient to say that some of the explanations offered are founded upon fundamentally false conceptions of the development of the umbilical cord, and that the rest are mere guesses, not theories built upon solid foundations of observed facts.

The essential anatomical feature of a velamentous placenta is the termination of the cord at some distance from the placental margin, the vessels diverging from one another and running over the chorion

* Communicated to the Royal Society of Medicine April 1912.

læve for a greater or less distance. They do not necessarily pass to the placenta by the shortest route, but sometimes make a wide sweep over the membranes, and may eventually reach the placenta at a point on the margin most distal from the cord. If these vasa aberrentia run in the portion of the membranes which lies in front of the presenting part of the child they are termed "vasa prævia," and it is obvious that they may imperil the life of the child in two ways—

(i) They may be compressed between the presenting part and the wall of the lower uterine segment and thus cause asphyxia.

(ii) They may be torn across when the membranes rupture and thus cause hæmorrhage.

The case I am about to record presents two unusual features—(*a*) the umbilical artery which ruptured was not a vasa prævia, and (*b*) the branch of the umbilical vein which corresponds to the ruptured artery was thrombosed throughout the greater part of its length.

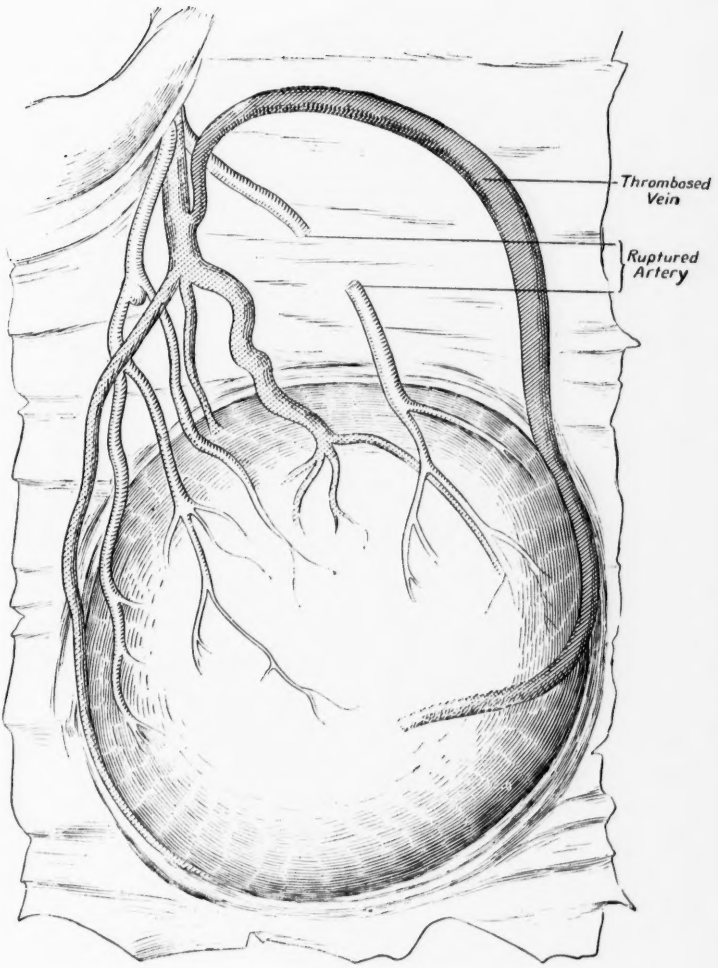
S.S., aged 32, was admitted into the Lying-In Ward of St. Bartholomew's Hospital on February 25 1912. Her one previous pregnancy had terminated in the birth of a still-born child in 1910 at Queen Charlotte's Hospital. The cause of the child's death is not known, but there is no note of any abnormality of the placenta.

Her second labour commenced at 6 a.m. on February 25 1912. I examined her at 3 p.m. on the same day, and found a generally contracted pelvis. The measurements were:—

Interspinous	9¼ ins.
Intercristal	9½ ins.
External conjugate	7 ins.
Diagonal conjugate	4 ins.
Estimated true conjugate	3½ ins.

The child was small and lay in the third position of the vertex; the head was above the brim, but could easily be made to enter; the cervical canal admitted one finger. Fœtal movements were felt and the fœtal heart was heard. I decided to allow the labour to take its natural course. At 6 a.m. on February 27 the cervix was fully dilated, and the head had descended into the pelvis. The patient now began to lose a little blood with each pain, and at 6-10 a.m. the membranes were ruptured artificially. The bleeding still continued, so at 6-30 forceps were applied and the child delivered without difficulty; it was pale and bloodless and the heart was not beating. Twenty minutes later the placenta was expelled.

The placenta, which I show to-night, is of the velamentous type, the cord breaking up into its constituents 3½ ins. from the placental margin. The first vessel to leave is an umbilical artery which has ruptured two inches from the cord. The distal end can be traced in the membranes to the placental margin. Almost at the spot where the artery leaves the cord a large vein enters; this vein measures


Thrombosed Vein
Ruptured Artery

15 ins. in length and runs across the amniotic sac between the amnion and chorion, then coursing over the fœtal surface of the placenta it dips downwards into the placental substance $2\frac{3}{4}$ ins. from its margin. The vessel runs across the membranes at a considerable distance from the placenta, and constitutes a true vas aberrans; it is thrombosed throughout its length except for the last half-inch. When it reaches the cord it turns on itself and runs downwards towards the placenta for $1\frac{1}{4}$ ins. before joining the main vein. The second umbilical artery leaves the cord a short distance below the level of the first and breaks up into its branches two inches from the cord. At its first bifurcation is an aneurysmal dilatation.

It is not easy to understand the conditions found, but I suggest the following explanation:—The thrombosed vein runs close to the opening in the bag of membranes through which the child was born and evidently must have been a vasa prævia. It was probably compressed between the presenting part and the uterine wall at a spot near its entrance into the main umbilical vein, for this is the only place where it contains no thrombus. As the result of the compression to which it was subjected the circulation was arrested, the vein became distended with blood and the blood coagulated. When the patient passed into the second stage of labour the membranes did not rupture immediately, and as the increasing retraction of the uterus drove the bag of waters on towards the vagina, the chorion gave way near the upper pole of the ovum. The amnion remained intact, but in the rupture of the chorion the artery was torn across.

A few days after the delivery of this patient my attention was drawn by Dr. Barris to a specimen of velamentous placenta with rupture of an umbilical vein, which had just been sent to the Museum attendant at St. Bartholomew's Hospital for preservation. Through the kindness of Dr. Drummond Robinson and of Dr. Harris, the Resident Medical Officer at the British Lying-In Hospital, I am able to record the clinical history.

Mrs. H. was admitted into the British Lying-In Hospital under the care of Dr. Drummond Robinson on March 2 1912. She went into Hospital for her delivery because she was anxious to have a living child, and in her one previous labour, which occurred in 1909, craniotomy had been performed on account of contracted pelvis. The pelvic measurements were:—

Interspinous	$10\frac{1}{4}$ ins.
Intercristal	$10\frac{3}{4}$ ins.
External conjugate	$7\frac{1}{4}$ ins.
Diagonal conjugate	4 ins.

Labour pains commenced at 10-30 a.m. on March 10, and with the first few pains about an ounce of blood was lost per vaginam. At

8-40 p.m. the membranes ruptured spontaneously; at the time of rupture there was a gush of blood and subsequently a little blood escaped with each pain; in all about 6 ounces were lost. At 10 p.m. the cervix was fully dilated, and at 10-20 the child was born. It was white and bloodless, no pulsation was felt in the cord and the heart was not beating. Fifteen minutes later the placenta was expelled.

When the placenta was examined the insertion of the cord was found to be velamentous, the cord terminating 3 ins. from the placental margin and a branch of the umbilical vein was torn across at the site of rupture of the membranes. From this vein the child had bled to death.

On referring to the literature of the subject I find that similar cases have been recorded by Peiser, Beuckisser, Ricker, Hüter. Chiari, Valenta, Langerhans, Croom and Hugues. In four of the cases death was due to rupture of a vein, and in the remainder to rupture of an artery. Knapp has reported a remarkable case of twins in which both children bled to death from the rupture of a single vessel:

A primipara, aged 21, went into labour at the end of eight months' gestation. Simultaneously with the rupture of the membranes a considerable quantity of blood escaped, and half an hour later she was admitted to the University Clinic at Prague. On admission, she was still losing bright red fluid blood. Twin pregnancy was diagnosed; both children presented by the vertex, the head of one occupying the pelvic brim, the head of the other the right iliac fossa. Vaginal examination showed that the cervix was absorbed; the canal admitted one finger and the placenta could not be felt; on inserting a speculum the blood was seen to come from the interior of the uterus. Fœtal movements were not felt and fœtal heart sounds were not heard. The patient presented no signs or symptoms of hæmorrhage and the possibility of a velamentous insertion of the cord and rupture of an umbilical vessel was considered. The vagina was plugged, and an hour later the first child was born naturally. After an interval of ten minutes the membranes of the second child presented; they were ruptured, and the child was delivered easily. Both children were blanched and dead. The placenta showed free anastomosis between the vessels of the two cords. The insertion of the cord of the first twin was velamentous, and in the rupture of the membranes a large vessel had been torn across. From the injury to this vessel both children had bled to death.

Diagnosis. The diagnosis can be made early in labour if pulsating vessels are felt running across the presenting pole of the bag of membranes. Peters records a case in which he diagnosed the condition in this way and by rupturing the membranes at a spot where no vessels were felt, and pushing aside the vessels in front of the presenting part he was able to deliver a living child.

After bleeding had commenced the condition has usually been

mistaken for placenta prævia or accidental hæmorrhage; in one or two instances, however, suspicion has been aroused because, in spite of severe bleeding, the mother showed none of the signs or symptoms of hæmorrhage. I suggest the possibility of confirming the diagnosis in such cases by microscopical examination of a film of blood, the demonstration of nucleated red corpuscles would prove that the child was bleeding. Unfortunately, it is only in hospital practice that the appliances for such an examination are likely to be at hand.

Prognosis. I have already pointed out that the child may die from asphyxia, from hæmorrhage or from a combination of the two. Peiser's case illustrates this last condition, for at the post mortem examination of the child the lungs contained a greenish-yellow fluid mixed with blood, and the trachea and bronchi, in addition to this fluid, contained meconium. Peiser concludes: "The cause of death is shown to be intra-uterine breathing of the child and intense anæmia the result of hæmorrhage from an umbilical artery. Obviously the asphyxia occurred at the beginning of labour through pressure of the head upon the vasa prævia interfering with the circulation at a time when the amnion was still intact. The death-blow was given by the hæmorrhage which set in through tearing of the umbilical artery when the membranes ruptured."

The case recorded to-night is of importance because it shows that if rupture of the membranes be unduly delayed it is possible for the child to bleed to death from tearing of a vessel which is not prævia.

Treatment. Spiegelberg advises that when the diagnosis is made early, rupture of the membranes should be delayed by every expedient until the cervix is fully dilated, and that the child should then be extracted as rapidly as possible. He remarks further: "Occasionally it will be possible to prevent injury to the vessels by artificially opening the bag of membranes at the least exposed spot and drawing the vessels to one side; but of course this can only be done if the passages are sufficiently dilated." This procedure was successfully adopted by Peters. It is clear that there is grave risk in following this course; the child may die from asphyxia before the membranes rupture, and after rupture the pressure of the presenting part may so extend the tear that the vessels are involved. Rücker proposed to pass ligatures round the presenting vessels with an aneurysm needle and to divide them between the two ligatures; the mechanical difficulties of such a procedure are obvious. In discussing his case, Peiser says: "Had the woman come under observation when the hæmorrhage commenced and had I been put on the right track by feeling the pulsation of the vessels, I could have administered a cold vaginal douche, for, I take it, stimulation by cold is the chief reason why children so seldom bleed to death in precipitate labour with tearing of the cord." This method of treatment seems to me to have little to commend it.

Knapp treated his case by vaginal plugging, but plugging is a two-edged weapon, for if the vagina be packed sufficiently tightly to arrest the bleeding it will also arrest the circulation through the vasa prævia and so asphyxiate the child.

I am forced to the conclusion that when diagnosed early in labour the best chance of saving the life of the child lies in Cæsarean or in vaginal section, but when the vessel has once ruptured the life of the child is so precarious that I do not think it justifiable to subject the mother to the risk of operation.

I am indebted to Mr. G. M. Roberts for the excellent drawing which accompanies this communication.

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Further Investigations into the Chemical Composition of Menstrual Fluid and the Secretions of the Vagina, as estimated from an Analysis of Hæmatocolpos Fluid, together with a Discussion of the Clinical Features associated with Hæmatocolpos, and a Description of the Character of the Obstructing Membrane.[1]

By W. Blair Bell.

Last year I published a communication on this subject based on a study of three cases. Since then I have been able to obtain material from nine more, owing to the courtesy of several gynæcological friends whose names appear in connection with their respective cases. Dr. Carlton Oldfield was particularly fortunate in meeting with three within a short space of time.

The results of further investigations entirely confirm my previous conclusions; and I propose, for the sake of comparison, to consider together all twelve cases in this paper.

I think it is hardly necessary to take up space by recounting fully the clinical histories as they have been supplied to me by the surgeons under whose care the patients were; but, so far as my data enable me, I append a tabulated form of the most important clinical features:—

CLINICAL FEATURES.

Case	Source of Material	Age in Years	Symptoms	Duration of Symptoms in Months	Menstrual Molimina
i.	*Royal Infirmary, Liverpool	18	Abdominal pain; dysuria	3	Regular
ii.	*Royal Infirmary, Liverpool	15	Dysuria, with retention of urine	5	None
iii.	Dr. T. W. Eden	15	Abdominal pain; retention of urine	6	Irregular
iv.	Dr. C. Oldfield	19	Abdominal pain; retention of urine	12	Regular
v.	Dr. Barbour (per Dr. Fordyce)	14	Abdominal pain; retention of urine	1½	None
vi.	*Royal Infirmary, Liverpool	14	Abdominal pain; retention of urine	1	None
vii.	Dr. C. Oldfield	16	Abdominal pain; retention of urine	2	None
viii.	Dr. C. Lockyer	19	Congenital Idiot; deaf and dumb; no history obtainable	—	—
ix.	Dr. C. Oldfield	16	None	None	Regular
x.	Dr. E. J. Maclean	17	Abdominal pain; dysuria	4	Regular
xi.	Dr. Lewers (per Dr. Maxwell)	14	Abdominal pain; retention of urine	6	None
xii.	Dr. M. Phillips	16	Severe abdominal pain; frequent desire, able to micturate with difficulty	$\frac{1}{12}$	None

* I have to thank my senior colleague, Dr. T. B. Grimsdale for permission to make use of these cases.

1. First communication Proc. Roy. Soc. Med., April 1911.

It will be seen from this table that the average age was 16½ years; and that abdominal pain and dysuria, with or without retention of urine, were cardinal symptoms. Abdominal pain was present in 9 out of 11 cases in which a history was obtained; and dysuria, with or without retention of urine, in all the 11 cases. The average duration of symptoms was between three and four months. Menstrual molimina were present in about half the cases.

The Obstructing Membrane.

The obstructing membrane which intervened between the retained secretions in the vagina and the exterior was examined in 6 out of the 12 cases. In the other 6 cases a portion of the membrane either was not obtained or it did not show both surfaces.

In the majority of cases of hæmatocolpos the membrane is thin and translucent, but it may be an inch to an inch and a half in thickness, as in Dr. Oldfield's second case (Case 7), in which a fairly deep dissection was necessary before the vagina was reached.

Formerly, cases of hæmatocolpos were thought to be due almost invariably to an "imperforate" hymen. Matthews Duncan appears to have been the first to question the correctness of this view. From the investigations here recorded it may be asserted that hæmatocolpos is but rarely produced by an "imperforate" hymen, and that it is usually due to imperforation of the lower end of the vagina. The cause of this will be discussed presently.

The outer vulval surface of the obstructing membrane is, of course, covered with squamous epithelium in all cases (Fig. 1). But, as I have previously shown,[2] columnar epithelium may be found lining the inner surface. This is well seen in Cases 2, 6, 9 (Figs. 2, 3, 4). Sometimes (Case 2) one may find on the inner surface both columnar and squamous epithelium (Fig. 2). At other times (Case 11) squamous epithelium alongside of a transitional form between the squamous and columnar type (Fig. 5).

The importance of the character of the epithelium lining the inner surface of the membrane is twofold: First, if there be columnar epithelium then the membrane cannot be an "imperforate," or, as I would prefer to call it, an "occluded" hymen, for the hymen has squamous epithelium on both surfaces from the first. Secondly, the discovery of columnar epithelium on the internal surface of these membranes proves that it is the lower end of the vagina which is imperforate; and, further, the condition throws considerable light on the development of the vagina.

With regard to the first point, it is important to remember the facts illustrated above, that both types of epithelium may be found side by side (Fig. 2), and that transitional stages between the

2. Proc. Roy. Soc. Med., *loc. cit.*

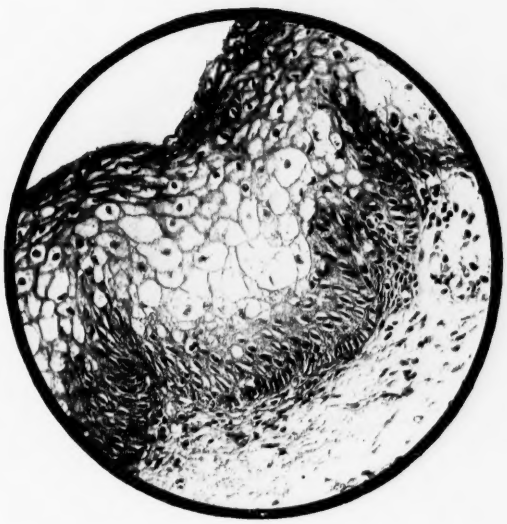


Fig. I.

(From Case IX. ×300.)

Showing the typical squamous epithelium always found on the vulval surface of the obstructing membrane.

Fig. II.

(From Case II. ×200.)

Showing both squamous epithelium (A) and columnar epithelium forming glands (B) on the vaginal surface of the membrane.

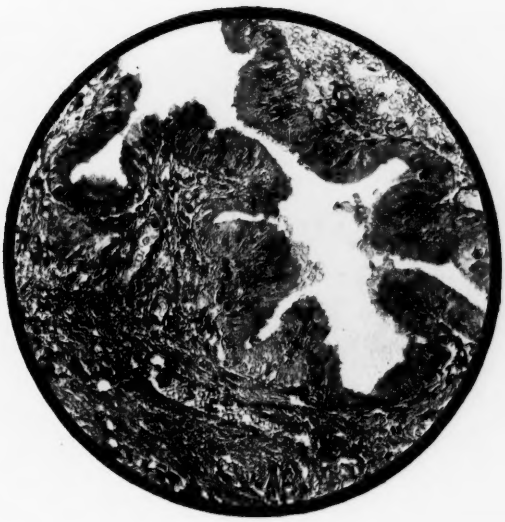


Fig. III.

(From Case VI. ×150.)

Showing typical columnar epithelium lining the vaginal surface of the membrane.

Fig. IV.

(From Case IX. ×300.)

Showing columnar epithelium several layers thick lining the vaginal surface of the membrane.

columnar and squamous type of epithelium may be observed (Fig. 5). These observations make it possible to believe that even if we do find squamous epithelium alone on both surfaces, as in Cases 3 and 12 (Fig. 6), it does not follow necessarily that the obstructing membrane is an occluded hymen, for the columnar may have been converted in squamous epithelium, as normally happens in the development of every vagina. Further, in this connection it may be pointed out that Cases 1, 3, 6 and 11 presented similar external naked-eye appearances. In each there was a median raphe; and in at least two (Cases 6 and 11) the edge of the hymen was distinctly visible. One hymenal edge is shown in a low power view in Fig. 7. On the vaginal surface of this obstructing membrane there is definite squamous epithelium which is in a somewhat transitional stage at one point (Fig. 5). These findings lead us naturally to consider the question of the imperforation of the lower end of the vagina from a developmental point of view.

I have previously explained [3] what I believe to be the normal method of development of the vagina. Apparently it may be developed in two ways: (1) The vagina is formed entirely by downgrowths from the Müllerian bulbs. These eventually perforate through on to the vulval surface. Proof of this is found in those cases of absence of the uterus in which there is also a total absence of the vagina. (2) The vagina is formed in its upper two-thirds by Müllerian downgrowths which perforate through the summit of an existing urogenital sinus. Proof of this is seen in those cases of absence of the uterus in which a very short "vagina" (really a urogenital pouch) exists.

Thus it follows that two varieties of hæmatocolpos are possible theoretically—that in which the imperforation exists above a urogenital sinus, and that in which the imperforation is at the vulval surface. Practically we only see the latter variety—although possibly the former may have occurred—and there is a very obvious reason for this. In the absence of a persistent urogenital pouch the downgrowths have much further to go to reach the surface, and this they may fail to do. Consequently we find the collection of fluid separated from the surface by a septum of varying degrees of thickness (*v. supra*).

The discovery of columnar epithelium—I believe first made by me [4]—on the inner surface of these membranes, which appears to be not at all infrequent, affords ample proof that the vagina, in which the secretions have been retained, is developed from Müllerian (for other reasons which I need not discuss here I exclude "Wolffian") downgrowths. Further, the finding of squamous and columnar

3. Proc. Roy. Soc. Med., July 1909, and "The Principles of Gynæcology," 1910.

4. Proc. Roy. Soc. Med., *loc. cit.*

epithelium together, and of transitional forms, suggests that the change from columnar to squamous epithelium occurs normally in the vagina.

Chemical Composition of Hæmatocolpos Fluid.

A chemical analysis was made of the fluid from ten of the twelve cases of hæmatocolpos recorded in this paper. This was as complete as was deemed necessary in six of these cases. In the remaining four sufficient fluid was not obtained for a complete investigation, but in these also most of the important points to be decided were investigated.

First of all, it may be stated that the fluids varied in consistency from that of thick beef tea to that of thin jelly. The colour also varied from a deep brick-red to a very dark chocolate colour. The following table summarizes the chemical analyses which were made:—

The chief points that call for special notice in the table of analyses are:

Urea was always absent.

The presence of mucin in all specimens in large, but varying, quantities in relation to the amount of organic matter present.

The blood calculated from the amount of iron present showed an average of about 43 per cent.

It may be noted that the mucin is of cervical and vaginal origin, while the blood is the result of menstruation from the uterus.

Fibrinogen and fibrin ferment were always absent. As I have previously pointed out, and as I hope further to prove in the near future, the absence of fibrin ferment is the primary cause of the non-coagulability of menstrual fluid, for the absence of fibrin ferment, and usually of fibrinogen, is always found in normal menstrual discharge. We are still investigating the subject, but have not yet discovered what actually happens to deprive the menstrual secretions of these blood-clotting ingredients. So far as we have gone it would appear that the elimination is affected by the endometrium, and we hope shortly to trace the actual process. There is nothing in the uterine or vaginal secretions to destroy the fibrin ferment, or to prevent their normal reactions in relation to the clotting of blood. This is proved by the following experiments:—

1. To find out if a large quantity of hæmatocolpos fluid would prevent blood from clotting. It was shown to have no effect by the following experiment: Normal sodium floride plasma with equal parts of hæmatocolpos fluid, together with fibrin ferment, gave a very good clot when kept at 40°C. for ten minutes.
2. To find out if hæmatocolpos fluid would destroy the fibrin

Fig. V.
(From Case XI. ×300.)
Showing typical squamous epithelium continuous with transitional (columnar) epithelium lining the vaginal surface of the membrane (cf. Fig. II).

Fig. VI.
(From Case III. ×75.)
Showing squamous epithelium on both surfaces of the membrane. It will be noted that the epithelium is much thinner on one surface (? vaginal).

Fig. VII.

(From Case XI. ×50.)

Showing the hymen projecting from, and taking no part in the formation of the membrane, the vaginal surface of which is shown in Fig. V.

Case	Date	Total Solids	Water	Organic Matter	Inorganic Matter	Total Nitrogen	Protein from Nitrogen	Mucin	Protein from Mucin	Protein from Blood	Urea	Blood (from amount of Iron present)	Iron	Fibrin Ferment	Fibrinogen	Lactic Acid	$\frac{N}{10}$ Lactic Acid per 100 grammes of fluid (Titration with Phenolphthalein)	Calcium	Blood Pigment
		%	%	%	%	%	%		%	%		%	%					%	
i.	6-5-1909	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ii.	10-5-1910	10·00	90·00	—	—	1·43	9·00	Pres.	—	—	—	—	—	Ab.	Ab.	—	—	0·012	Oxyhæmoglobin and little Methæmoglobin.
iii.	10-2-1911	10·00	89·90	—	—	1·36	8·50	Pres.	3·50	5·00	—	25·0	—	Ab.	Ab.	Pres.	—	—	Oxyhæmoglobin and trace of Methæmoglobin.
iv.	28-5-1911	19·73	80·27	16·18	3·55	2·53	15·93	Pres.	3·38	12·00	Ab.	62·3	0·030	Ab.	Ab.	—	—	0·019	Oxyhæmoglobin.
v.	25-7-1911	9·16	90·84	8·28	0·88	1·20	7·56	Pres.	2·51	5·05	Ab.	24·2	0·012	Ab.	Ab.	Pres.	21 cc NaOH	0·008	Oxyhæmoglobin with a little Methæmoglobin.
vi.	25-7-1911	16·38	83·62	15·72	0·66	2·32	14·61	Pres.	5·52	10·20	Ab.	50·2	0·026	Ab.	Ab.	Pres.	9 cc NaOH	0·008	Oxyhæmoglobin and reduced Hæmoglobin.
vii.	8-9-1911	14·17	85·82	13·19	0·98	1·95	12·28	Pres.	4·18	8·10	Ab.	40·2	0·020	Ab.	Ab.	Pres.	12 cc NaOH	0·015	Oxyhæmoglobin.
viii.	9-9-1911	23·79	76·21	23·05	0·73	—	—	Pres.	—	—	Ab.	—	—	Ab.	Ab.	—	—	—	Oxyhæmoglobin and a little Methæmoglobin.
ix.	22-9-1911	15·08	84·92	13·60	1·42	2·90	18·27	Pres.	5·90	12·30	Ab.	59·7	0·032	Ab.	Ab.	Pres.	4 cc NaOH	0·046	Oxyhæmoglobin and reduced Hæmoglobin.
x.	13-11-1911	20·66	79·34	19·01	1·59	2·81	17·70	Pres.	7·36	10·34	Ab.	50·7	0·025	Ab.	Ab.	Pres.	8·16cc NaOH	0·021	Methæmoglobin.
xi.	16-2-1911	14·66	85·34	14·02	0·64	1·97	12·41	Pres.	6·40	6.00	Ab.	30·0	0·015	Ab.	Ab.	Pres.	15 cc NaOH	0·009	Hæmoglobin & Methæmoglobin.
xii.	19-3-1912	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

ferment in the blood. It was shown to have no effect by the following experiment: Defibrinated and laked sheep's blood with equal parts of hæmatocolpos fluid were kept in an incubator at a temperature of 38°C. for two hours. Then 8 drops of the solution were mixed with normal plasma and kept at 40°C. for 15 minutes. A good clot was obtained.

Consequently the hypotheses copied from book to book that the mucin or the lactic acid found in the vagina are the cause or causes of the non-coagulability of normal menstrual blood can no longer be accepted. The result is brought about by some special vital function of the *healthy* endometrium, which destroys or extracts the fibrin ferment and fibrinogen.

The next important matter to be noted is the presence of lactic acid in all specimens examined, in spite of the fact that all the fluids were sterile except those from Cases 10 and 11, from which colon bacilli were isolated. No doubt these specimens had become contaminated during or after removal. In no case was the vaginal bacillus of Döderlein found. It is obvious, therefore, that the acidity of the vagina is not due specifically to the vaginal bacillus, as Döderlein has asserted, and as has been almost universally accepted. It is probable that the presence of lactic acid is due to the action of some cellular enzyme on the mucin which is always present.

Lastly, we come to the question of the calcium content of hæmatocolpos fluid, and consequently of menstrual discharge.

We have already seen that the menstrual secretions form only a certain percentage of the hæmatocolpos fluid, and that on an average mucin (mostly from the cervix) forms about one-third of the whole. The amount of calcium found in the mixture varies between 0·008 per cent. to 0·046 per cent., a range practically identical with that we have recently found in connection with the amounts excreted in urines. This quantity is from a little more to more than six times the amount contained in normal systemic blood, which, according to Oppenheimer, contains 0·0072 per cent. of calcium. When we remember that only a certain proportion of the hæmatocolpos fluid is the result of menstrual excretion it is obvious how high must be the calcium content of the undiluted menstrual discharge. This is a matter to which I have previously alluded on many occasions.[5]

Conclusions.

1. *The cardinal symptoms of hæmatocolpos* are abdominal pain and dysuria, with or without retention of urine.

2. *The obstructing membrane* or septum is usually the lower end of an imperforate vagina, and it may be lined on the inner

5. Proc. Roy. Soc. Med., July 1908, and *Brit. Med. Journ.*, March—April 1909.

surface with columnar epithelium, alone or mixed with squamous epithelium.

3. *The non-coagulability of menstrual blood* is due to the absence of fibrin ferment and fibrinogen, and not to mucin or lactic acid.

4. *The lactic acid found in the vagina* is present in the absence of bacteria, and cannot be due, therefore, to the vaginal bacillus of Döderlein.

5. *The calcium excretion in menstrual discharge* is very great: greater even than that found in urine.

6. *Urea* is absent from hæmatocolpos fluid.

I am greatly indebted to all those colleagues and friends who have been kind enough, and who have taken so much trouble, to forward specimens to me. I have indicated in the clinical table the sources of my material. Without the help of these friends it would have been impossible in such a short time to have carried out this research. I have also to thank Dr. Ernest Glynn for undertaking the bacteriological investigations for me; and Professor Benjamin Moore for the laboratory facilities granted to my assistants, T. A. Webster and W. J. South, who have so well carried out a complex series of analyses. The expenses have been defrayed out of the fund for research generously placed at my disposal by Mr. J. Arthur Smith.

SELECT CLINICAL REPORTS.

(Under this heading are recorded, singly or in groups, cases to which a special interest attaches either from their unusual character or from being, in a special sense, typical examples of their class.)

A Case of Ovarian Pregnancy.

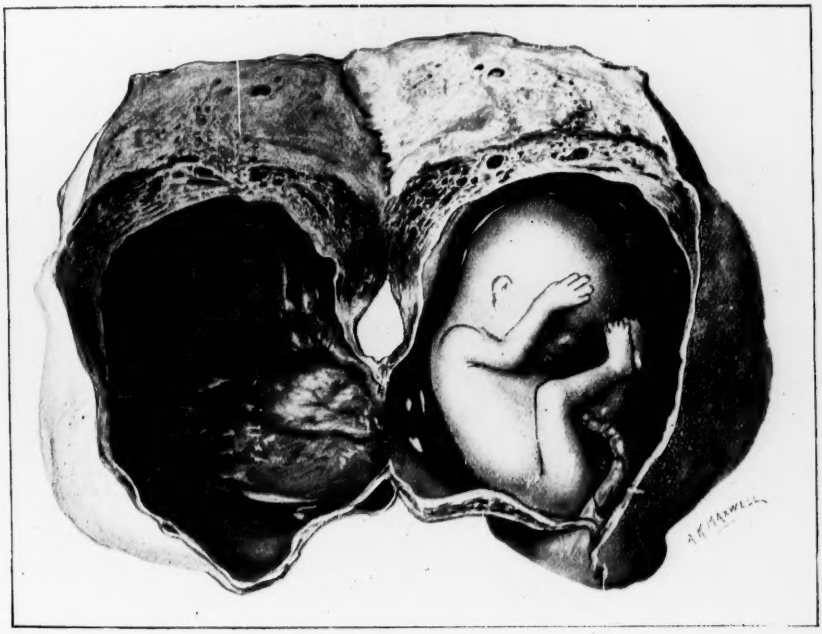
By A. G. Banks, M.D., F.R.C.S.E.,
Senior Assistant Gynæcologist, Glasgow Royal Infirmary.

The interest of this case, which came under my care during Dr. Marshall's absence, lies chiefly in the specimen, which is so perfect as to deserve detailed description.

Mrs. P., aged 24, was seen by my colleague, Dr. James Taylor, in the out-patient department of the Royal Infirmary, complaining of hæmorrhage of six weeks' duration. No period had been missed. On bimanual examination a soft cystic, freely movable, slightly tender mass was felt in the right side of the pouch of Douglas, no evidence of hæmatocele, however, being noted. She was kept under observation till December 18, when, the bleeding still continuing and a sharp attack of right-sided pain having supervened, she was admitted to Dr. Balfour Marshall's ward. A more detailed history was now obtained. Patient's last menstrual period ceased on October 7. On October 24, hæmorrhage resembling an ordinary menstrual flow, began, unaccompanied by pain, and continued daily for a month: during the past two weeks it had been much more profuse. The first onset of pain occurred on November 11, followed by three other attacks of increasing severity, November 20, 27, and on the day of admission. These pains were labour-like, and lasted for about fifteen minutes, bleeding being always greater in amount afterwards. Menstruation had previously been quite regular, type $^{28}/_{3}$, and painless. She had been married five years and had two children, the younger being two years old.

Bimanual examination revealed a tender, somewhat doughy mass about the size of a Seville orange lying in the pouch of Douglas, to the right of the uterus. There was increased resistance in the pouch of Douglas to the left of the mass—somewhat suggestive of effused blood. In front, the right iliac region was tender on pressure. A diagnosis of right tubal pregnancy with small hæmatocele was made.

A B B



C D

A. Stroma of ovary.
B. Cut edge of attachment.
C. Placental tissue.
D. Seat of rupture.

Laparotomy was performed on December 21. The usual dark appearance of the parietal peritoneum was observed before opening, but only a small quantity of dark fluid blood—not more than half an ounce—was found free in the peritoneal cavity. The rounded tumour was easily lifted up, two fine, thread-like, not very recent adhesions being cut. It was seen to consist entirely of ovary, the tube, of normal size and appearance, being absolutely free both in the ampullary portion and at the fimbriated extremity. Oöphorectomy was done, a segment of ovary being however left in the region of the ovarian ligament. The raw edges were approximated with a running catgut suture, the peritoneum sponged clean and the abdomen closed in layers. Recovery was uneventful, the patient being dismissed well 19 days after operation.

Description of specimen. The specimen forms an irregularly rounded cyst about the size of a tennis-ball, the cut edge of attachment running through ovarian tissue. This latter, easily distinguished by its density and whiteness, is spread out on the sac for some distance. The free surface exhibits pea-like nodules and larger bosses of darker colour; the bosses on section are seen to be chiefly at the placental site. There are some flaky masses of adherent fibrin, and at the pole opposite to the ovary the cyst-wall is brittle, thin, and slightly ruptured. On section the ovarian part of the sac wall is seen to occupy about $2\frac{1}{2}$ inches of the total circumference and varies in thickness from 1 inch at the median to $\frac{1}{4}$ inch at the outer end: the rest of the wall is thin with localised thickening at the site of attachment of the cord. It contains a fœtus of—as nearly as can be ascertained—eleven weeks, and perfectly developed. There is a short twisted umbilical cord about 1 inch in length attached at the free pole. In the thick part of the wall the white fibrous outer, more or less altered, ovarian substance is clearly seen, with a darker, spongy zone separating it from the membranes. Seen from the inside, the deep purple colour of the wall is very marked. Sections were made and microscopically examined, in four situations, viz.:—

(1) Through the site of attachment at its thickest part in the plane of the mesovarium.
(2) Through the outer tapering edge of the ovary.
(3) Through the wall at the funic site of attachment.
(4) Through one of the pea-like nodules.

Sections 1 and 2 show definite ovarian substance; at the periphery dense stroma with well-marked Graafian follicles, numerous and large blood-vessels—the arteries exhibiting moderate endarteritis. The ovarian stroma can be traced toward the outer end of section 2 as a dense fibrous layer, the distinctive ovarian elements disappearing and the fibres becoming compressed and arranged in longitudinal

bundles with few thin-walled blood-vessels. Toward the free pole of the sac (section 3) this fibrous capsule is thin, the deeper layers necrosed or eaten away by villi now in a state of degeneration. Immediately below the dense ovarian tissue is a somewhat narrower layer, reticulated and œdematous, 3-4 millimetres broad, containing very few vessels and an occasional Graafian follicle. Toward the outer edge of the ovary this layer disappears entirely, dense ovarian tissue being directly continuous with a necrotic fibrous zone showing extreme hæmorrhagic infiltration and remains of completely degenerated villi—the so-called "layer of Nitabuch." The œdematous layer is certainly altered ovarian tissue, and its deeper part again becomes highly vascular—arteries and veins being abundant and large, forming a striking feature in the stained section: the perivascular connective tissue is denser and villi are observed in some of the maternal sinuses. There are largish oval cells with deeply stained nuclei adhering to the lumina of the sinuses, suggesting proliferation of the endothelium, but trophoblastic masses are also present in the same situation. There is no definite decidual change here, although some of the stroma cells in the neighbourhood of the blood-lacunæ are highly suggestive. As, however, one or two isolated multinucleated masses are noted, though certainly not in close proximity, the probabilities are in favour of a trophoblastic origin.

Below this layer is the necrotic fibrinous layer, above mentioned, and it can be traced varying in breadth from 2-5 millimetres in all the sections, being equally well marked though thinner in section 3.

The chorion and amnion are well seen in all the sections, the villi of the former being scanty and more or less degenerated (hyaline change) in sections 1 and 2, well-formed and numerous in sections 3 and 4, where also nucleated red cells are seen in the fœtal capillaries: the character and number of the villi indicate these latter sections as being through, or in the neighbourhood of, the placental site.

The localised thickenings (section 4) are due chiefly to fibrous tissue which is very largely necrotic—even the peripheral fibres being affected to a greater or less degree. The villi are also more numerous and better preserved than at any part other than the placenta.

In general then, the microscopic investigation conclusively proves the ovarian origin of the pregnancy. True ovarian tissue has been demonstrated at the hilum. The sac-wall consists mainly of three definite layers: (1) an outer, thin and fibrous with a covering of irregularly cubical epithelium, (2) an intermediate necrotic fibrous layer of variable thickness containing more or less completely degenerated villi, and showing extreme hæmorrhagic infiltration, and (3) chorionic tissue more or less perfect, with a well-developed amnion. No definite lutein tissue was noted in any of the sections,

which indeed, on account of the age of the pregnancy, was probably to be expected.

The placental site, it is interesting to note, is not at the hilum as the appearance of the deeper ovarian tissue on naked-eye examination seemed to indicate, but towards the free medial side, where also rupture and slight hæmorrhage have taken place.

The approach of the villi, in some places, to the surface is perfectly comparable with the similar process in tubal pregnancy; the subsequent hyaline degeneration of the outermost villi and incorporation with newly formed fibrous tissue strengthens the wall all round except in the neighbourhood of the placenta where erosion or rupture might be expected to occur. In tubal pregnancy rupture usually occurs between the 6th and 10th weeks after impregnation—rarely is it delayed beyond the 12th week. In such a pregnancy there is always some muscular tissue in the wall of the sac, and we may suppose this tissue to accommodate itself more readily to the needs of the growing embryo than the firm fibrous tissue of the ovary. Indeed, complete preservation of the fœtal relationships at such a late date as the present specimen is very rare, and in the majority of recorded cases of ovarian pregnancy, rupture has taken place within the first two or three weeks. Slight as was the rupture in the present instance, it seems highly improbable, considering the thinness of the sac and its freedom from adhesions, that it could have been much longer delayed—apart from the risk of erosion.

Although the corresponding tube was not removed, its appearance and relationships were perfectly normal, and as a small piece of ovary could be left, there seemed no adequate reason for excising the tube.

I have to acknowledge my indebtedness to Professor Teacher for his kind help and advice in the pathological examination of the specimen.

Four Cases of Pelvic Abscess secondary to Appendicitis.

By Frances Ivens, M.B., M.S. (Lond.),
Honorary Medical Officer for Diseases of Women, Liverpool Stanley Hospital.

The important relationship between disease of the vermiform appendix and the female pelvic organs has been recently discussed,[1] and attention has been drawn to the difficulty experienced in locating the primary source of infection. The notes of the following cases illustrate some of the common causes of error in diagnosis:—

In three cases the onset of the attack was accompanied by free uterine hæmorrhage, and in the fourth the history dated back to a premature labour. The patients were accordingly either sent in direct to the gynæcological department or transferred there from the medical or surgical wards.

Owing to the absence of definite abdominal symptoms it was only by rectal or vaginal examination that it was made clear that pus was present in the pelvis. In attempting a preliminary diagnosis as to the organ primarily at fault, most of the points usually given as decisive in turn proved misleading.

In one instance, although the appendix was gangrenous, no vomiting occurred. Constipation was rarely a marked feature, as the majority of hospital patients take a dose of aperient medicine when they feel out of sorts. In one case, instead of being in relation with the right adnexa, the appendix was fixed on to the left ovary.

The only constant symptoms have been severe abdominal pain, a continuously raised temperature and rapid pulse. On the other hand, the almost constant occurrence of irregular uterine hæmorrhage has directed attention to the pelvic organs, although there have been no preliminary symptoms indicating gynæcological trouble.

The most important indication for immediate operation has been the obviously serious condition of the patients with a pulse rapid out of proportion to the temperature, whereas in pelvic abscess due to the gonococcus or tubercle bacillus the constitutional symptoms are often slight.

In looking up cases of coincident appendix and pelvic disease, I find that in 350 laparotomies undertaken in gynæcological cases, the appendix was also definitely affected in 30 instances. Even with the abdomen open it was not always easy to decide which was the primary lesion, or whether the coincidence was merely accidental. That the incidence of appendix complication is 8·5 per cent. is a weighty

argument for abdominal rather than vaginal technique, as the former gives an opportunity of examining and if necessary removing the appendix.

In all four cases the appendix was at once removed after evacuation of the abscess. The importance of this step was specially impressed upon me by the case of a young married lady I saw in March 1910 with Dr. Mary Lee, where a pelvic abscess of obscure origin was present. The patient was, I thought, in too serious a condition to stand a prolonged operation necessitating the separation of many adhesions, and I contented myself with drainage. A stormy convalescence resulted; a second abscess formed under the left rectus, and finally hæmaturia of pyæmic origin. Youth and good nursing pulled the patient through, but within six months another and more severe attack occurred. I then opened a pelvic abscess, and in this instance sought for and removed a gangrenous appendix. A rapid and permanent recovery took place.

In Case i (bilateral ovarian abscess) no drainage was used, and primary union took place. In Case ii, where the abscess was localized in the right ovary the incision was closed and healed by primary union, but a residual abscess had to be opened a fortnight later. In both Case iii (gangrenous appendix) and Case iv (general peritonitis) drainage was used. The Fowler position was invariably adopted, and to it and the free use of salines either subcutaneously or per rectum, I attribute the recovery of the patients.

The spread of infection was apparently directly by the peritoneum, and in the cases of ovarian abscess was probably through a recently ruptured Graafian follicle. There was no evidence of the "appendiculo-ovarian" ligament acting as a channel.

CASE I. *Bilateral Ovarian Abscess.*

Mrs. O.H., aged 24, 2-para, was sent into the Stanley Hospital on August 21 1909. The patient was thin, anæmic and obviously in considerable pain. She dated the onset of her illness a fortnight before admission, when an attack of pain occurred in the right side of the abdomen, and irregular uterine hæmorrhage began. She was constipated, but there was no vomiting. Both temperature and pulse-rate were raised, and she was kept in bed for a fortnight on fluid diet, with no improvement. On my return home, on September 7, I saw her, and decided to operate at once as the lower abdomen was rigid, and an irregular fluctuating swelling could be felt on each side of the uterus. There was no history of vaginal discharge, but a diagnosis of inflammatory tubes was made. A median subumbilical incision revealed no intestinal adhesions beyond the swollen appendix which was glued to the enlarged left ovary. During its separation an abscess in the left ovary burst, discharging thick but not offensive

pus. The right ovary also contained an abscess, and the tubes were acutely congested but patulous. The appendix was inflamed and contained a large concretion. The lumen at the base was almost obliterated. Both appendages were removed, with the exception of a small portion of the right ovary. After mopping out the pelvis with hot saline solution the abdomen was closed without drainage. The patient rapidly recovered, and left the hospital in a fortnight.

CASE II. *Right Ovarian Abscess.*

Mrs. C.L., aged 23, 1-para, was transferred to my care from a medical ward in the Stanley Hospital on October 3 1909. The illness had begun a month before with severe abdominal pain, vomiting and constipation, coincident with the onset of the first menstruation after a confinement four months previously. The patient looked pale and ill, the temperature was only slightly raised, and the pulse-rate was high in proportion. The bowels acted with enemata, but there was considerable abdominal distension. An irregular swelling could be felt in the right iliac region, and a mass on each side of the uterus.

In making a diagnosis in this case I was somewhat influenced by the findings in Case i, and I decided to operate at once, on November 1. A median subumbilical incision was made. Numerous intestinal adhesions were first separated, and a swelling could then be seen in the right ovary which was closely adherent to the inflamed uterus and right tube. The left tube and ovary were swollen and buried in recent adhesions, while the sigmoid flexure was held down in the pelvis by adhesions. A large quantity of offensive pus escaped from the right ovary and was mopped up and the tube and ovary removed. A mass could be felt in the appendix region, and as it could not be reached from the mid-line satisfactorily an oblique incision was made. The omentum was firmly fixed to the pelvic wall, and three coils of adherent small intestine had to be separated and repaired. A small cavity was then revealed containing a loose concretion in close proximity to the appendix, which showed a perforation about one inch from the extremity. The appendix was removed and the base invaginated into the cæcum. The operation area was carefully mopped out with hot saline, and the abdominal incisions closed without peritoneal drainage. Primary union occurred, but a fortnight later an emphysematous fluctuating swelling suddenly appeared under the appendix incision, and a large quantity of offensive pus was evacuated, coming up from the original concretion cavity. It was drained. The patient rapidly improved, began to put on flesh, and was discharged in a fortnight with a small sinus which rapidly healed.

CASE III. *Pelvic Abscess.*

Mrs. M.E., æt. 22, 1-para. A dull aching pain in the right side of the lower abdomen followed a premature confinement in September 1910, and was present more or less continuously until March 10, when it became very acute. The patient was admitted on March 12, and was transferred to the gynæcological ward on March 13. She complained of extreme abdominal pain, the pulse was rapid, temperature 102°, but no vomiting had taken place. There was rigidity of the lower abdomen, and a mass could be felt in the pouch of Douglas, but owing to the severe pain elicited by examination it was not easy to detect fluctuation.

I operated the following morning, and opened the abdomen by a median subumbilical incision. After packing off the general peritoneal cavity offensive pus was evacuated from the pelvis. The vermiform appendix lay over the brim, the tip was gangrenous and a perforation was present near the base. Omental and intestinal adhesions shut off the general peritoneal cavity. The right tube and ovary were congested and œdematous, but were not removed. The appendix was ligatured and removed, and the pouch of Douglas drained through the abdominal wound. Speedy recovery took place.

CASE IV. *Pelvic Abscess with Secondary Rupture into General Peritoneal Cavity.*

M.D., æt. 16, single, was admitted into a surgical ward with acute abdominal pain of recent onset. The pulse was quick, temperature 102°, and uterine hæmorrhage had begun with the pain. When I saw the patient the following evening she was looking ill, but no abdominal signs were present except slight rigidity of the lower abdomen. On rectal examination a definite mass could be felt in the pouch of Douglas, and an operation was arranged for the following morning. Unfortunately no instructions were given as to the administration of purgatives and castor oil was given as usual. In the early morning the patient vomited, complained of severe abdominal pain, and the pulse-rate rapidly increased. When I saw her at 9 o'clock there were signs of free fluid in the peritoneal cavity. As it was now quite clear the appendix was affected I opened the abdomen through a right oblique incision, when thin purulent fluid with fæcal odour gushed out. On passing a finger into the pelvis an abscess cavity was located and thick extremely offensive pus welled up. After mopping up the fluid with dry gauze the appendix was rapidly removed after ligaturing the base. It was perforated, acutely inflamed and lay over the brim of the pelvis. The pouch of Douglas and the right kidney pouch were drained, but no attempt was made to wash out the peritoneal cavity. The patient was extremely collapsed, and the pulse almost uncountable. She was at once

propped up in bed and saline solution injected subcutaneously by Barnard's tubes. She rallied most satisfactorily. A fortnight later a second abscess formed above and in front of the uterus on the left side, and was drained through a median incision. Six weeks after admission the patient was discharged, with a small sinus, but feeling quite well and in good general condition.

REFERENCE.

Macnaughton-Jones. "Relation of Appendix to Adnexa." Trans. Roy. Soc. of Med., Obstet. Sec., vol. iv, No. 9.

Cæsarean Section in a Case of Dystocia due to Coils of the Cord, 28 inches long, around the living full-term Male Fœtus, 8 lbs. 2 ozs. in weight.

By Henry Briggs, M.B., F.R.C.S. (Eng.),
Professor of Obstetrics and Gynæcology, University of Liverpool.

A short umbilical cord—whether absolutely short or relatively short by its own coils around the fœtus—may become taut enough during labour to arrest the descent and prevent the engagement of the head in the pelvic brim.

On the part of the cord, such an extreme and unyielding interference, at an early stage, with the mechanism of labour is a very rare occurrence.

In the following recent example of a relatively short cord, the treatment of the dystocia by Cæsarean section exposed the extent and security of the coiling of the cord, and the degree of its tension, in a manner otherwise clinically unattainable.

There were three complete, collar-like and appreciably tight, coils round the neck: from the navel to the neck the cord passed under the right shoulder and across the back of the chest and over the left shoulder: the remaining portion of the cord from the neck to the placenta was very short.

The photograph of the original placenta and the coils of its 28-inch cord around a substitute, a smaller fœtus, 7 lbs. in weight, reproduces their relations and illustrates the check exerted upon the original, a larger, fœtus, 8 lbs. 2 ozs. in weight, within the uterus, after the premature spontaneous rupture of the membranes at the 26th hour and the subsequent 26 hours' drain of the liquor amnii.

Other effects of the stable cord coiling, of the persistent placental adherency and of the excessive uterine retraction were experienced: (1) prior to the Cæsarean section the fœtal back became impalpable through the layer of flatulently distended intestines which filled in the space between the abdominal wall and the retracted uterus below the umbilical level; (2) at this site during the Cæsarean section the unopened and deeply-placed uterus proved too rigid and inflexible for peritoneal approximation: the intervening intestines, partly covered by omentum, had to be pushed aside by gauze packs whilst the uterine incision was made in the centre of a furrow $1\frac{1}{4}$ inches deep.

The placenta was implanted on the anterior and right wall of the uterus: a large area of the placenta and its short portion of intact cord were withdrawn from the uterus during the extraction of the child by the breech.

The pallor of the child was at first alarming; the coils of the cord were quickly loosened; the child breathed, and is now thriving.

In all other respects the steps of the Cæsarean section were of the usual character.

Enquiries arise as to (1) the diagnosis, (2) the symptoms and the physical signs of the first stage, and (3) the clinical evidence on which the choice of treatment was founded.

(1) There will be no attempt to declare the steps of a difficult, if not an impossible, diagnosis of the exact nature of the obstruction.

(2) The symptoms and the physical signs were recorded, and the management of the first stage of labour, long delayed and lasting 53 hours, was conducted by the Obstetric Assistant (Dr. Levin), the two Clinical Clerks, the Matron and the Ward Sister of the Liverpool Maternity Hospital.

(3) My own disinclination to interfere between my first visit at the 43rd and my third visit at the completion of the 52nd hour rested on the patient's previous obstetrical history; the favourable general condition; the two obstetrical factors—the passages and the fœtus—consistent with the birth of the living child when the cervix was fully dilated and the head engaged.

A possible forceps operation was contemplated up to the 52nd hour, *i.e.*, until the patient had been anæsthetised and the fœtal head palpated by the hand introduced per vaginam.

Then the sagittal suture lay nearer the pubes (Litzmann's obliquity—an expression of the direction of the taut cord); the disengaged head receded readily above the brim as if its ascent were easier than its descent; the manipulation of the head elicited the sensation of its being held from above; the head persisted in lying transversely, awkwardly placed, high up and inaccessible.

A forceps operation was objectionable.

There had not been any uterine hæmorrhage from separation of the placenta nor any local tenderness of the uterus.

The fœtal heart was beating normally.

The obstruction within the uterus was beyond any safe method of attack from below; gentle internal handling was limited to the fœtal cranium above the ears.

The expulsive labour pains had been repeatedly relieved by sedatives.

Patience in awaiting the natural efforts had been adequate, if not excessive.

Radical relief was due, or overdue; preparations were made and the Cæsarean section was commenced at the 53rd hour of the labour.

Dystocia from coils of the cord.

Photographs of the placenta and cord around a substitute fœtus.

History of the Labour.

J.S., aged 22: a carter's sturdy wife. At the full term of her third pregnancy, dating from April 21 1911, was admitted into the Liverpool Maternity Hospital, in labour, at 10-30 a.m. on January 28 1912. She was then examined by the Ward Sister. The fœtal head lay transversely above the brim with the occiput to the right; one finger's dilatation of the cervix had been attained in the 10½ hours since the onset of the labour pains; the pains were slight. She spent the first day in Hospital with little complaint.

On the following day, January 29, the membranes ruptured prematurely and spontaneously at 2 a.m. (26th hour). At mid-day Dr. Levin, the Obstetric Assistant, reported a half-dilated cervix. At 5-30 p.m. an injection of scopolamine and morphia subdued the almost violent expulsive pains. At 7 p.m. Dr. Briggs first examined her. At 9 p.m. a ¼-grain of morphia was injected. At 11 p.m. the cervix was still incompletely dilated and the head was still above the brim.

On January 30, at 4 a.m., there was incomplete dilatation of the cervix. A general anæsthetic was given for the physical examination, the result of which has already been included in this report.

On February 15, in good health, she left for her home with the growing infant she had nursed throughout her stay in Hospital.

Previous Obstetrical History.

Two previous labours, both at the full term and both normal; the first at the patient's own home; the second in hospital, lasted only 12 hours, April 6 1910, the child weighed 7 lbs. 11 ozs.

Remarks.

A solitary clinical report of a Cæsarean section and its revelations in a case of coiled cord, of a rare and extreme stability, suggests further enquiry into the methods of diagnosis on which accurate authority has yet to be stamped.

Are inferences such as could be drawn from the case now reported sufficiently reliable, or in what direction is greater precision possibly obtainable?

Normal fœtal heart sounds throughout the 53 hours of labour were not inconsistent with a stable coiling of the cord.

Delivery by version or forceps would have been difficult, if not impracticable, with safety to the mother.

The life of the child rested upon the Cæsarean section.

A Case of Retroversion of the Gravid Uterus complicated by Overdistension of the Bladder and Hæmaturia.*

By J. Barris, M.B., F.R.C.S.
(From the Gynæcological Department, St. Bartholomew's Hospital.)

I am indebted to Sir Francis Champneys for permission to record the notes of the following case, which presents some unusual features in its clinical history:—

G.P., a housewife, aged 35 years, sought advice in the out-patient department of St. Bartholomew's Hospital on January 27 1912 on account of inability "to hold her water."

Past history. Previous pregnancies 6, children 6, the last on March 29 1910. Menstruation was regular and normal; the last regular period ended at the end of September 1911; since then amenorrhœa.

History of present condition. Amenorrhœa since the end of September 1911; morning sickness began in October, and the breasts enlarged, the patient being pregnant. On January 8 the patient experienced a severe attack of pain in the lower part of the abdomen, and the following morning was only able to pass urine with difficulty. The amount passed was scanty. A doctor was called in, who advised the passage of a catheter, but the patient assured him that she had passed her water. Her doctor was satisfied with this, and a catheter was not passed. For the next seven days the patient continued to suffer pain in the bladder region, and could only pass urine with difficulty. For the fortnight previous to being seen at Hospital she was unable to hold her water; she had to pass it every hour during the day and about 10 times at night. During this time she also noticed that her abdomen rapidly increased in size, and that her legs became swollen. She then came to Hospital, and was seen in the out-patient department by Dr. Griffith, who found the abdomen enormously distended. A tumour was outlined which extended to within an inch of the costal margin. It felt tense and elastic, and had the characters of a large ovarian cyst. A catheter was passed, and seven pints of clear urine were withdrawn. The abdominal tumour then disappeared.

The patient was then admitted to Martha Ward, and it is noteworthy that 3½ hours after the passage of this large amount of urine a catheter was again passed when 3½ pints of urine were withdrawn.

* Report of case read at meeting of Royal Society of Medicine.

This urine was examined, and the following report was made: sp. gr. 1005, faint cloud of albumen, no blood corpuscles, slightly alkaline.

The following note was dictated by Sir Francis Champneys shortly after her admission:—

"Both thighs and legs, especially the left, are œdematous."

Per hypogastrium. "Rising out of the pelvis to one inch above the navel is an elastic tumour dull to percussion."

Per vaginam. "The cervix is almost out of reach, high up and behind the symphysis, and pointing forwards. The sacral hollow is occupied by an elastic tumour which fills the pelvis."

A rubber catheter, *i.e.*, No. 5, was then passed and 28 ozs. of bloody urine were withdrawn, about three minutes being occupied in its withdrawal. Bleeding then ceased. The pelvic tumour was now displaced upwards by the fingers, the patient being in the left lateral position.

Note of bimanual examination after reposition of the tumour. A mass like the gravid uterus of the 3rd month is felt lying above the brim and extending into the abdomen. A rubber ring of 3 inches diameter was inserted into the vagina. (By the pelvic brim is meant a line joining the top of the pubes to the promontory of the sacrum.)

Pathological report on blood-stained urine. Sp. gr. 1018; reaction alkaline; albumen present, 0·45 Auprecht; sugar absent; bile absent; pus absent; urea 1·7; blood, quiac test positive, red blood corpuscles present; no casts; film and culture showed no micro-organisms.

Further history of the case. A rubber catheter was inserted for the next 12 hours after the examination, and during that time no more blood was passed in the urine.

The patient was given urotropin, and the catheter was passed regularly every four hours for the next four days, after which date its use was discontinued. The urine on one occasion only contained a few red corpuscles and leucocytes. There was at no time any evidence of cystitis.

The patient was discharged on February 5, and when seen nine days ago was still in good health. The ring is no longer worn, the uterus is large enough to remain above the brim, the urine is passed without difficulty, and is sterile and contains no blood corpuscles. The bladder sound now passed 4 inches only.

Remarks. 1. Hæmaturia in association with retroversion of the gravid uterus is a well-known complication, but in all the cases which I have been able to find recorded the hæmaturia has been caused by the accompanying cystitis. In this patient, however, there was no evidence of cystitis, for no micro-organisms were found either on staining films or after cultivation. That cystitis did not supervene is somewhat remarkable.

2. The hæmaturia may have been caused by the rupture of a blood-vessel in the wall of the bladder or by a tear in its lining mucous membrane owing either to the overdistension of the viscus, or to the sudden relief of tension upon the withdrawal of the urine. Grosse, in a critical review of the causation of hæmaturia during pregnancy (*revue Mensuelle de Gynecologie,* March 1910), states that a tear in a large varicose vein of the bladder is a common cause. He mentions that the bladder has been opened in such cases, and the existence of a torn varicose vein demonstrated. These varicose veins are, in his opinion, due to the pregnancy just as are hæmorrhoids and varicose veins of the vulva.

Luys has examined the mucous membrane of the bladder during the latter months of pregnancy. In all cases so examined he has noted an intense vascularization of the mucous membrane, and some dilated and tortuous veins. These appearances have been specially remarked in the region of the trigone.

No cystoscopic examination was made at the time in the case now recorded, as it was feared that the manipulation might cause a recurrence of the bleeding. When the patient was again seen, nine days ago, the opportunity was taken of examining the bladder mucous membrane by the cystoscope, when a varicosity of the veins could be clearly demonstrated.

A Fœtus with Congenital Hereditary Graves's Disease.

By Clifford White, F.R.C.S.

The thyroid gland was shown at the March meeting of the Obstetrical and Gynæcological Section of the Royal Society of Medicine.

The mother of the child was a primipara who was admitted in labour to University College Hospital on November 10 1910. Her history was as follows: She was aged 23 and had been married ten months. The symptoms of Graves's disease were first noticed when she was five months' pregnant and rapidly became so marked that in September, 1910, she was admitted to a medical ward with all the classical signs of Graves's disease—exophthalmos, thyroid enlargement, nervousness, tremor and tachycardia. All these symptoms progressively increased as pregnancy advanced. When I saw her the pulse was 120 and the blood-pressure 142 mm. of mercury. The uterus appeared to be at the full term of pregnancy. The child was lying with the vertex presenting in the right occipito-posterior position. The fœtal heart was uncountable, but was well over 200 per minute, and a discussion arose whether this was due to the fœtus being affected by the maternal thyroid toxæmia or whether the disease was actually present in the fœtus. When labour had lasted eight hours the cervix was fully dilated and the head on the perineum, but the child was passing meconium. Its heart was slower than before but was still over 200 per minute. Forceps were applied under chloroform anæsthesia and the child delivered at 11.45 p.m. It was a male child weighing 4 lbs. 6 oz. There was no post-partum hæmorrhage.

The note made by the house-surgeon immediately after delivery was: "The child presents all the features of the disease present in the mother. The eyes are prominent and staring, the thyroid shows well-marked uniform enlargement. The heart-beats are uncountable and only a loud murmur is heard over the præcordium. There is also a fine tremor of the hands. Pupils medium size. Temperature 99° F." The next day the pulse dropped to 150 for a short time but later rose to 200 again. The child remained very cyanosed. The day after, November 6, the child died, having lived thirty-five hours.

The puerperium was normal; the mother's pulse varied between 120 on the second day after delivery to 100 on the eleventh day. During the puerperium the symptoms of Graves's disease became less and a diminution of ½ in. was noted in the circumference of the neck. The urine was normal. After delivery she did well for some

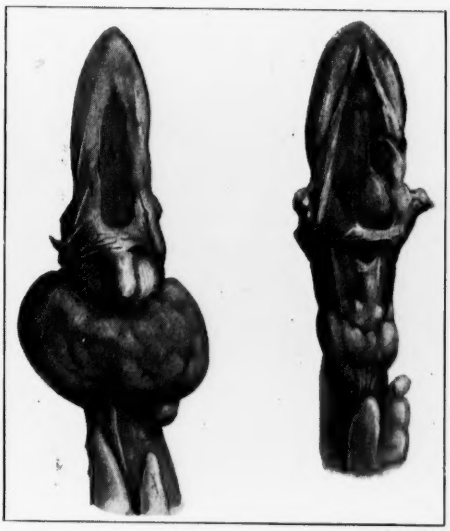
months but became pregnant again in April, and soon afterwards her symptoms became worse again. In December 1911, she was delivered in the Middlesex Hospital of a stillborn premature child that showed no abnormalities. The mother again improved after delivery.

The report of the post-mortem made on the infant two hours after death is as follows:—The skin is cyanosed. There is no rigor mortis present. The eyes are protruding, especially on the right side, so that neither eyelid is quite closed. The pupils are equal and are half dilated. On opening the skull, the caput is large and hæmorrhagic, the dura mater is hyperæmic. There is a large subdural hæmorrhage extending over the right parietal region and going down over the temporo-sphenoidal lobe. The ventricles are healthy. The pituitary is normal. The peritoneum, stomach, intestines, gall-bladder, liver, kidneys, ureters, bladder and pancreas are normal. The suprarenals are rather large considering the weight of the child, but are normal on microscopic examination. The lungs show atelectasis. The heart is normal. Thymus normal. The thyroid, after hardening, measures 3·5 cm. transversely, 2·9 cm. from above down, and 2·1 cm. from before back. An accessory thyroid measuring 8 mm. by 7 mm. by 5 mm. lies on the thyroid cartilage under the root of the tongue. A culture was taken from the thyroid with the usual precautions, but no growth of organisms was obtained.

Microscopic sections of the thyroid show glands lined by high columnar cells. These cells are larger than those lining the alveoli of the thyroid from a normal fœtus. These cells enclose spaces which are devoid of colloid, but which contain mucinous material. The quantity of mucin present varies—some acini are almost filled, others merely contain a small amount adherent to the surrounding cells. There is marked proliferation of the epithelium so that solid columns of cells spread from one acinus to another. In places the proliferation has extended into the lumen of the acini so that the spaces can only be recognized, as such, with difficulty. The cells are for the most part healthy, but in places there is definite evidence that the cells are degenerating. There is no lymphoid hyperplasia present.

The child therefore presented all the usual symptoms of Graves's disease and as regards the pathological condition present the thyroid shows the usual fœtal absence of colloid with well-marked epithelial proliferation both intra-alveolar and extra-alveolar. In addition to this there are areas of degeneration present such as are found in some adult cases, and also the increased height of the columnar cells.

I think the clinical and pathological evidence leaves no doubt that this is an example of a child affected *in utero* with exophthalmic goitre and born of a mother suffering from the same complaint. The only atypical symptom present in the child was the asymmetry of the exophthalmos, but this is explained by the presence of the



cerebral hæmorrhage on the right side which was also, no doubt, the cause of death.

The case is of interest from several points of view:—

First, as regards the mother. It again shows how pregnancy acts as a factor in the production of Graves's disease which progresses until delivery and then improves. Delivery was uneventful and puerperal super-involution, which has been so often described as a complication, did not occur as the patient subsequently became pregnant again.

Secondly, as regards the hereditary nature of the disease. Although not very common, there are many cases on record of Graves's disease affecting mother and child. Mackenzie [1] publishes a case where eight out of ten sisters were affected and one of these eight had four children who developed the disease.

Thirdly, as regards the existence of the disease at birth. I have been able to find no case like this one recorded in the literature and believe it to be a unique specimen. Ochsner and Thompson's[2] case in a child, aged 5 months, is the youngest case I have heard of. Berry[3] states that the disease is "almost if not quite unknown before the age of $2\frac{1}{2}$ years." Steiner[4] thought a case at the age of 5 years worth recording. Although the child did not live long enough for a full observation to be made yet the persistence of the tachycardia throws doubt on Svehla's[5] statement that the fœtal thyroid contains no cardio-accelerator substance. Lastly, it is of interest as being one of the very few cases in which it is possible to make the diagnosis of a fœtal disease (as opposed to a malformation) before the birth of the child.

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Total Occlusion of the Duodenum in a New-born Child.

By Clifford White, F.R.C.S.

Stenosis of the lumen of the small intestine high up is sufficiently uncommon to make the following example worthy of record.

The infant was born at full term after an uneventful labour. The mother was a multipara, there is no history of her other children being in any way abnormal. At birth it was seen that there was a large para-umbilical hernia—the sac covering it soon burst, thus leaving the intestine exposed.

When admitted to University College Hospital under Dr. Blacker's care, the following condition was found:—The child was a normal sized male. The stomach and a mass of intestine were lying loose on the outside of the abdominal wall; the lower end of the intestine reached the abdominal cavity through an aperture immediately above the umbilicus, this aperture was sufficiently tight to cause extreme vascular congestion of the herniated parts. The large size of the hernia entirely prevented any chance of successful replacement by operation. Early peritonitis was present but occasional waves of peristalsis could be seen passing along the stomach. The child took nourishment for some hours but later vomited a large quantity of the fluid that it had taken. The "meconium" passed was quite white in colour so that a diagnosis of congenital obliteration of the bile-ducts was made—the post-mortem examination, however, showed that this was not correct. Touching the usually insensitive visceral peritoneum caused obvious signs of pain although there was no increased peristalsis produced which could have dragged on the mesentery—for example, touching the wall of the stomach or picking up a small piece between the finger and thumb caused the child to cry although there was no movement of the stomach as a whole and the attachment of the mesentery was not touched. Death occurred after 36 hours. The child had seemed in constant pain although hypodermic injections of morphia were given to try to keep it in a state of torpor. Its vitality was extraordinary and morphia had little effect, for instance, on the first day, during the space of 9 hours, it received 12 minims of a fresh B.P. solution hypodermically without showing the usual toxic symptoms.

The whole of the abdominal viscera with the neck of the sac were hardened in formalin before they were examined. It was then seen that the hernia had contained the stomach, the whole of the small

and most of the large intestine. The remaining viscera were within the abdominal cavity and were normal.

The stomach measures 8 cms. long, the pylorus is well developed and leads to the dilated duodenum which forms the usual triangular curve. The upper horizontal piece measures 7 cms. long, the perpendicular piece 8 cms. long and the lower horizontal one 7 cms. long. The diameters of the stomach and duodenum were 5·5 cms. and 3 cms. respectively. The common bile-duct is patent and opens at the junction of the upper horizontal and the perpendicular portions of the duodenum. A quantity of bile was present. The duodenum ends in a *cul-de-sac* lined by normal and intact mucous membrane—internally there is no pucker or depression to indicate where the jejunum was attached, but on the outer coat of the blind extremity is a solid cord which almost at once becomes canalised and is continued into a small intestine of the usual size. The occlusion is not near the neck of the hernial sac. The whole intestine, both large and small, is filled with white cheesy material but naturally not a trace of bile is present.

REVIEWS OF CURRENT LITERATURE.

UNDER CHARGE OF EARDLEY HOLLAND, M.D.

LIST OF COLLABORATORS:

LONDON. Alban Doran, F.R.C.S.; S. Jervois Aarons, M.D.; J. Barris, M.B.; C. White, M.D.; J. A. Willett, M.D.; J. Wyatt, F.R.C.S.
EDINBURGH. Miss J. H. Filshill; R. W. Johnstone, M.D.; James Young, M.D.
GLASGOW. E. H. L. Oliphant, M.D.
ABERDEEN. W. R. Pirie, M.B.
BIRMINGHAM. Frederick Edge, M.D.; H. B. Whitehouse, M.S.
LIVERPOOL. H. Leith Murray, M.D.
SHEFFIELD. W. W. King, M.B.
CHELTENHAM. C. J. N. Longridge, M.D.

Difficulty of Artificial Sterilisation in Women.

FALGOWSKI (*Zentralblatt für Gynäkologie*, No. 42, 1911) adds another case to the literature on this subject in which pregnancy occurred after excision of both tubes. This was carried out at the end of 1909 in a 22-year old nullipara who had been infected with gonorrhœa after her marriage and in whom there was a chronic inflammation of the adnexa. The tubes were excised from the uterine cornua and the raw edges on the wall of the uterus were carefully united with sutures. The following year she had bleeding and passed what seemed to be an aborted ovum, but as she had gone to live at a distance this was not confirmed. In February and March 1911, she again missed her periods. At the end of March she again had bleeding and passed what was undoubtedly an ovum. Falgowski was in attendance on this occasion. J. Y.

The local application of sugar in gynæcology and midwifery.

KUHN (*Zeitschr. f. Gebs. u. Gyn.*, Bd. lxx, Hft. 1) contributes an investigation into the chemistry of the genital passages, with particular reference to the influence of lactic acid upon the flora, and to the production of the acid as a result of the decomposition of sugar and other carbohydrates. He concludes that the lactic acid content of the vagina, is in health considerable, but is diminished in pathological conditions. It plays a part in the prevention of puerperal fever, and it can be easily and considerably increased by the introduction of sugar into the vagina. Sugar introduced into the vagina in a concentrated form produces a continuous formation of lactic acid, which arises from grape sugar by the action of bacteria, either normal or pathological, in the birth passages. Harmful by-products are not formed in this decomposition of sugars. Sugar and lactic acid have a favourable influence on the vaginal mucosa, and are even of therapeutic value in many vaginal diseases. From a series of 58 cases of labour in diabetics in which only one is reported to have had puerperal

fever, the author deduces that diabetics are more exempt from puerperal sepsis than other puerperal women. He believes the introduction of sugar into the upper part of the vagina to be a prophylactic against puerperal sepsis, and a therapeutic measure in the early stage of the infection, as the sugar gives rise to a stream of lactic acid which prevents alkaline decomposition. R. W. J.

Ureteric fistula successfully treated by implantation into the bladder.

ABADIE (*Ann. de Gyn. et d'Obstét.*, March 1912) records a case where a ureteric fistula following total abdominal hysterectomy for carcinoma was treated by replanting the ureter into the bladder. Catgut sutures were used and the stitching was aided by previously passing a ureteric catheter to steady the ureter during the operation. The patient remained well and free from recurrence 18 months afterwards. C. W.

Persistent cloaca—technique of cure.

CHARLES HOSMER (*Surgery, Gynæcology and Obstetrics*, March 1912). The patient upon whom this operation was performed was a healthy, well developed child with the exception that the rectum opened into the vagina.

An incision was made round the orifice of the bowel and extended down through the posterior vaginal wall and perineal body to just below the normal position of the anus. The gut was then dissected free from all its attachments for a sufficient distance to allow of it being placed in the new-formed bed. The lower end of the gut was then sutured to the skin in the proper position for the anus and the posterior vaginal wall and perinæum sutured up in front.

The wound healed by first intention giving a perfect rectum, vagina and perineal body. There has not been the least trouble with the rectum since the operation. The author does not say whether he found any external sphincter muscle, but there is no indication of it in the drawings which illustrate the article. W. W. K.

Dilatation of the cervix by Laminaria tents.

STRAUSS (*Zeitschr. f. Geb. u. Gyn.*, Bd. lxx, Hft. 1) basing his statements on 400 cases of exploration of the uterus in Walthard's clinic at Frankfurt, discusses the value of this method of dilatation. He is an enthusiastic advocate of digital exploration before every curettage. The great advantage of tents is that they do away with the necessity of an anæsthetic. It is very rare that dilatation by graduated dilators can be satisfactorily carried out without anæsthesia. After dilatation the exploration can also be carried out without anæsthesia. In his 400 cases, anæsthesia was required only eight times, and then at the express wish of the patients. While the tent is *in situ* the patient keeps her bed. The pain is rarely great, but the patient should be forewarned about it, and the fact that it does not mean that anything is wrong explained to her. Opium in some form is given when necessary.

The tents used were " sterile " ones supplied by the " Schweizerisches Serum und Impfinstitut, Bern," and they were tested and found sterile on different occasions. The risk associated with their use is infection of the upper part of the generative tract. This may be due to the passage of bacteria upwards from the vagina, or to the retention of uterine secretions where these are already infected. The latter risk cannot be averted, but

it can be minimised by not keeping the tent in position more than 24 hours, and by using perforated tents which allow the secretion to flow out. The former risk was proved by the author in thirty cases, by taking swabs of the vagina and the uterus immediately before and after the employment of the tent. In all cases the uterus was sterile before the tent was passed, and in 23 it was afterwards found to contain the same forms of bacteria as the vagina. In only 8 cases, however, was there any disturbance of temperature. Over a larger series of cases, in which such careful examination was not made, he found that in 358 cases where a tent was used once, 26—7·3 per cent.—shewed a rise of temperature. In 39 cases where a tent was twice introduced, 2—5·1 per cent.—shewed rise of temperature.

The author concludes that careful use of laminaria tents has advantages which outweigh the slight risks involved. R. W. J.

Vaginal Fixation for Retroflexion.

BAMBERG (*Zentralblatt für Gynäkologie*, Nr. 41, 1911) reports a series of cases in which Dührssen's deep vaginal fixation was carried out for retroflexion. Forty-eight cases in all were operated upon and of these forty-two were followed up. In all the operation was carried out more than a year before, and, in almost a half of the cases, it was performed from two to four and a half years before. Of the 48 patients none died; in three 6·25 per cent.) the convalescence was disturbed, in only one seriously. Thirty-seven were parous, 11 were nulliparous. Twenty out of the 42 had had a mobile retroflexion. Of these only four, *i.e.*, 20 per cent., were found to have recurred. Of 22 in which the operation was carried out for a fixed retroflexion there was recurrence in none. All over the results were satisfactory in 90 per cent. J. Y.

The blood supply of uterine myomata.

JOHN A. SAMPSON (*Surgery, Gynæcology and Obstetrics*, March 1912). By an ingenious method of injecting the blood vessels of myomata the author had made an extensive study of the vascular supply of over a hundred specimens. Two injection masses were used, a coloured gelatin, and a suspension of bismuth in gelatin; the latter method was adopted so that stereoscopic radiographs could be prepared of the injected tumour and the exact course of the vessels studied *in situ*.

By these methods all myomata, except possibly the very small ones, were shown to have an arterial blood supply which could be easily seen with the naked eye. The tumours, especially the larger ones, were often found to be more vascular than the myometrium itself. The stereoscopic radiographs show that arterial blood is carried to the tumour by a nutrient vessel, which is either a peripheral or radial branch of the arcuate arteries from the uterine. In most specimens there was no anastomosis between the nutrient artery and those of the myometrium, but in some of the larger tumours an anastomosis was demonstrated in the vessels at the periphery.

In many myomata there was such a very extensive development of the intrinsic arteries that the tumour was an angioma rather than a myoma.

The venous supply was found to vary between wide limits, but it was usually very scanty and in many instances no vein could be demonstrated. The author has not yet determined how the arterial blood gains access to the veins. But it seems probable that the exchange takes place in one of two ways: (1) Within the tumour—a method which the injections proved

to exist in some cases. (2) Outside the tumour—the blood entering and leaving by arteries to enter the veins in the capsule. This has not been demonstrated, but is suggested on account of the scarcity, or even apparent absence, of veins in the tumours.

These experiments have also demonstrated some interesting points in regard to the vascular changes associated with age and the various degenerations.

The majority of the more vascular tumours are found in relatively young women, while in older patients not only the uteri, but also the myomata present in them, are distinctly less vascular. This diminution in the size and number of the vessels offers an explanation of the well-known clinical observation that myomata become smaller, and may apparently disappear as age advances.

Œdematous myomata may be very vascular; the author attributes the disturbance of the blood supply either to increased permeability of the vessels, or to some interference with the escape of blood. He has found that in these tumours the gelatin of the injection mass may escape *without the pigment* into the tissues, showing that the vessels are more permeable. In other cases there was extravasation of *the gelatin and pigment*, thus indicating a rupture of the vessel wall.

Areas of hyaline degeneration were found, as a rule, to be non-vascular, but in some specimens an arterial blood supply was demonstrated. On the other hand two specimens of red degeneration which were examined both showed a deficiency of vessels.

In three myomata with calcareous deposits arteries were found to extend up to and around the calcareous areas. It is not clear, therefore, to what extent these changes are due to a diminished blood supply.

The vessels of myomata undergoing sarcomatous degeneration showed no change from that found in other parts of the same specimen.

The article is illustrated with one coloured plate and numerous excellent photographs, many of which are stereoscopic and are so arranged that they can be cut out and examined with a stereoscope. W. W. K.

The ultimate results of the conservative surgery of the ovaries.

Edward Reynolds (*Surgery, Gynæcology and Obstetrics*, March 1912). The author is of opinion that the small cystic follicles and abnormally persistent corpora lutea so often seen in the ovaries are in many cases the cause of dysmenorrhœa and neurasthenia. While he admits that the ovaries are often found in this condition when there is no complaint of pain, he advises resection of the cysts if symptoms are present.

The technique which he employs is to split the ovary to the hilum, whereby it is easy to locate even the smallest cysts. After complete removal of all cysts the ovary is sewn up; but there is no mention of the troublesome bleeding which so often follows operations of this type on the ovaries.

The author has performed this operation on 110 private patients, and has obtained the after-histories of 106. In eighty-seven (82 per cent.) of the cases "the patient or her physician was satisfied with the results of the operation." Of the remaining cases, nine were in no way improved, five neurotic patients were relieved of their dysmenorrhœa but not otherwise benefited, and in five others there was recurrence both of the enlargement of the ovary and of the pain. Two of these last, however, were subsequently operated upon and have so far remained cured. W. W. K.

Ovarian struma.

TRAPL (*Zeitschr. f. Geb. u. Gyn.*, Bd. lxx., Hft. 1) operated on a healthy woman who was four months pregnant, and had an ovarian tumour filling the true pelvis. It had the appearance of an ordinary cystoma. The patient aborted ten days after the operation, but otherwise made a good recovery. Two months later she was quite well. Five months after the operation she was found to have an enlargement of her thyroid gland, marked tremors, and a pulse of 80. Two months later the neck was a little larger, and the pulse still 80, but the tremors were gone. Still two months later the neck was slightly larger, but the pulse only 72 and no other symptoms.

Examination of the tumour showed areas in which there was a distinct thyroid structure—alveoli lined with one or two rows of columnar epithelial cells, and full of colloid.

Trapl concludes from the clinical history that this thyroid tissue in the tumour was not only morphologically the same as thyroid, but was actually functionally active, and that the goitre was of the nature of a compensatory enlargement after the removal of the tumour. The symptoms were presumably due to some temporary loss of balance in regard to the internal secretion. Reference is made to the few similar cases recorded, but there is no bibliography. R. W. J.

Sclerosis of uterus and ovaries: hæmorrhagic ovarian cysts: ruptured ectopic sac simulated.

GOINARD and LAFFONT (*Bulletins de la Soc. d'Obstét. et de Gyn. de Paris, etc.*, February 1912) report a very definite example of sclerosis of the upper genital tract giving rise to symptoms such as are now so familiar in cases of tubal abortion and rupture of tubal sacs and even in the far less frequent yielding of a gravid ovary. The importance of hæmorrhagic cysts independent of conception has been recently recognised (see note on Mériel, "Ovarian Dysmenorrhœa at Puberty," JOURNAL, vol. xix, 1911, p. 484, and Jayle, "Intraperitoneal Hæmorrhage from Rupture of an Ovarian Hæmatoma," *ibid*, p. 281). The history of Goinard and Laffont's patient is fairly complete. A married woman, aged 42, was admitted into hospital on account of a recent acute attack of vomiting and syncope associated with discharge of blood, dark like coffee grounds. As the uterus was enlarged, coincidence of tubal pregnancy and uterine fibroid was suspected. The authors found that the patient had been married 24 years and had been pregnant thirteen times. Ten of the pregnancies were normal. Between the twelfth and thirteenth she had an attack of acute peritonitis and underwent an abdominal section, but the authors failed to obtain any information about the operation or to make out what had been done. The periods returned after convalescence, and fourteen months later the last pregnancy began. It ended in a miscarriage at the second month, with severe flooding. That accident occurred eight years before the present illness. The patient continued quite well and regular until three months before admission. Then three distinct hæmorrhages occurred in the course of one month. For a month later there were no more bleedings, and no menstrual molimen, but in the course of the third month the acute attack, with discharge of coffee-ground coloured blood occurred. The patient was kept at rest for a few weeks and then sent into hospital. The authors found that the uterus was enlarged and pushed to the left by a firm tumour of the size of a fist which occupied the right fornix. Subtotal

hysterectomy with removal of the appendages was performed. The uterus was bulky, but of normal form, general fibrosis, with marked sclerotic changes and dilatation of the vessels in the muscular walls, was discovered. The left ovary was sclerosed, its parenchyma being replaced by tough fibrous tissue. No corpus luteum or any kind of cyst could be detected. The right ovary appeared as a cyst of the size of a fist which had opened up the mesosalpinx. This cyst was full of black blood, mostly coagulated. The cyst wall on its free surface bore a thickened area containing corpora lutea, none very recent, and degenerating Graafian follicles all surrounded by characteristic sclerosed tissue. The corresponding Fallopian tube was congested and thickened, the ostium closed and the fimbriæ retracted. The left tube was thickened and congested but apparently not obstructed. Under the microscope, the endometrium was found to bear an investment of normal epithelium, but the subepithelial connective tissue was involved in the sclerotic process. The ovarian tissue on the right side and the inner and outer parts of its cyst showed all the microscopic appearances of sclerosis and no vestiges of chorionic villi could be detected. A. D.

Fibromata and myomata of the Fallopian tube.

AUVRAY describes and pictures (*Arch. Mens. d'Obstét. et de Gynécol.*, January 1912) a large fibromyomatous tumour of the left tube removed by himself. The tumour had become cystic and there was a hydrosalpinx of the same side. The uterus contained myomatous nodules. The literature is reviewed and cases are recorded of fibromyomata and adenomyomata of the tube. These last may become malignant. E. H. L. O.

Paccini's corpuscles in the Fallopian tube.

CORYLLOS (*Revue de Gyn.*, March 1912) describes a case in which these bodies were found in a tube removed from a patient with chronic salpingitis. Three were found by cutting serial sections of the right tube, none were discovered in the left tube although looked for with the greatest care. They were in the isthmus of the tube and were within the thickness of the wall of the tube and not merely in the subperitoneal aveolar tissue. Pain was not a specially marked symptom. The author has searched the literature but has only been able to find one other case recorded. C.W.

The treatment of ectopic gestation.

EDWIN CRAGIN (*Surgery, Gynæcology and Obstetrics*, March 1913). In considering the treatment of ectopic gestation the author recognises two classes of cases based upon the period of gestation :—

(1) Cases of early ectopic gestation (*i.e.*, under six months).

(2) Cases of advanced ectopic gestation.

The reason for including gestation as late as the sixth month in the class of " early " cases is that, in the judgment of the author, up to this period the life of the fœtus should be disregarded, whereas, after this period, the fœtus becomes a factor which cannot be disregarded.

In " early " cases the author has adopted the following rule for his own guidance : If the patient is seen at the time of tubal rupture, or abortion, operate as soon as careful preparation can be made, unless the patient is in a condition of such extreme shock that the operation in itself would prove fatal. In this case the patient should be carefully watched, noting the pulse rate at frequent intervals to see if she is improving or losing

ground. If improving operate when she is in a better condition. If she is losing ground operate at once with the least possible manipulations.

After discussing whether the affected tube should be removed or not, the author gives it as his opinion that this should always be done. But he does not approve of removing the opposite tube if healthy (as has been suggested by some authors) in order to prevent the possibility of a second ectopic gestation in that tube.

In the interstitial variety of extrauterine gestation it is sometimes possible to excise the affected cornu, but in the majority of cases it is safer to remove the uterus.

An exception is made to the general rule of early operation in cases of intra-ligamentous rupture. If the diagnosis is clear and the hæmorrhage evidently extraperitoneal, displacing the uterus, operation may be postponed if the patient can be kept under close observation. If repeated hæmorrhage or suppuration occur, laparotomy or vaginal drainage respectively must be at once undertaken.

In determining his line of treatment in " advanced " ectopic gestation the author is guided by his experience in four cases, which he has had under his care. In two of the cases, in which the children were alive at the time of operation, both were healthy and survived; the two others though dead were perfectly formed.

It therefore seems justifiable in dealing with these cases to give consideration to the life of the child, and hence he advises that pregnancy should be allowed to advance to eight and a half months when operation should be undertaken. This period is selected so as to avoid the danger of spurious labour both to mother and child.

If the gestation is of the tubo-ovarian variety the vessels supplying the placenta can often be ligatured, as in one of the author's cases, and the sac removed entire. But under ordinary circumstances the safest plan of treatment is to incise the gestation sac, remove the child, stitch the sac to the abdominal wound, and pack with gauze.

If the fœtus is dead the author advises that operation should be postponed for a few weeks when the placenta will be much more easily removed. The patient must be watched, however, for infection is liable to occur, when immediate operation becomes imperative. W. W. K.

The effects of pituitary extracts.

BENTHIN (*Zeitschr. f. Gebs. u. Gyn.*, Bd. lxx, Hft. 1) records the results of the use of extract of the hypophysis in Walthard's clinic at Frankfurt. The preparations used were Burroughs Wellcome & Co.'s, and Hoffmann-la-Roche & Co.'s " Pituglandol." In the first place it was found, as has now been repeatedly recorded, that the pains of labour were increased in frequency, in duration, and in strength. In four cases Benthin records tetanic contraction lasting for seven minutes, without, however, any menacing alteration in the fœtal heart beat. These prolonged contractions only followed first doses: there is no evidence of any cumulative effect of the drug. Benthin finds in the drug a means of diagnosis between false and true pains, as, in his experience, the uterus, except during labour, is refractory and does not respond to the injection of pituitary. In labour, on the other hand, even the smallest doses are promptly followed by an increase in the pains. He also finds that in the second stage the action of the secondary powers is increased. It should be particularly noted that

in four cases out of a total of forty—10 per cent.—there was some post partum hæmorrhage.

Benthin believes that the induction of labour by means of the drug is only accidentally achieved, and that it cannot be regarded as of value in this connection. R. W. J.

Bacteriological observations on the effects of vaginal douching in gravid women.

Esch and Schröder (*Zeitschr. f. Geb. u. Gyn.*, Bd. lxx, Hft. 1) refer to Zangemeister's bacteriological researches on the vaginal flora before, during, and after labour, which went to shew that, besides infection from "ectogenous" organisms, there might be infection from "entogenous" organisms, *i.e.*, organisms present in the vagina before labour. The authors made observations to see whether douching diminished the number of these latter organisms. They employed various fluids, normal saline, 1 in 1000 perchloride, 1 per cent. kresol, and 1 per cent. peroxide of hydrogen. The results were good in all cases, the douche producing a marked diminution in the number of organisms for some time afterwards. This was probably largely owing to the mechanical effect of the douche, not to the nature of the fluid used. The authors recommend douching before, not after, internal examinations, and any form of operative interference. It is also recommended in protracted labours, during which the secretions of the passages are dammed up. R. W. J.

Placental antibodies in the blood of pregnant women.

Paul Bar contributes a paper (*Arch. Mens. d'Obstét. et de Gynécol.*, March 1912) on this highly technical subject. After reference to the contradictory results obtained by various observers, he gives his own observations made on women only, and maintains that:—

(1) Deviation of the complement is not found with the placenta and serum of a non-pregnant woman.

(2) Deviation is not found with placentas after the fourth month with serum of a woman more than five months pregnant.

(3) Deviation can be found with placenta under four months and serum of less than five months pregnancy.

(4) This deviation, under the conditions of his observations, may be considered rare.

In the case of a woman with intractable vomiting, her serum gave a positive result with her own placenta and with that of a woman operated on for extrauterine pregnancy. These same placentas with, respectively, nine and six other serums gave negative results. E.H.L.O.

Total Quantity of Blood During Pregnancy and the Puerperium.

Zuntz (*Zentralblatt für Gynäkologie*, Nr. 39, 1911) has carried out researches with the object of determining whether there is any increase in the total quantity of blood in the maternal circulation during pregnancy. That there is some increase is suggested by the fact that a greater quantity of blood may be lost during labour with impunity than under ordinary circumstances. The principle of the method employed consists in making the woman under investigation breathe a measured amount of carbon monoxide, and withdrawing a quantity of blood from a vein several minutes afterwards. Two and a half to three c.cm. of Co per kilogm. of the weight of the woman can be administered with impunity. By chemical analysis

the proportion of Co in the withdrawn blood is obtained and thence the total amount of blood.

In five cases he finds that the percentage of the body-weight corresponding to blood is greater during the last weeks of pregnancy than after labour in four cases, the percentage figures being 6·56, 9·07, 11·26, 6·03 respectively before labour, and 5·89, 7·51, 9·89, and 5·33 respectively after labour. The times allowed to elapse before the second calculations were made varied from eight days to twenty days. In one case the proportions were reversed, the percentage before labour being 4·14 and afterwards 6·07. In one case, in which the calculation was carried out only before labour, the percentage was 9·04. J. Y.

Hæmolytic Amboceptor and Complement in Colostral Milk.

Köbele (*Cent. f. Bacter. Orig.*, Bd. 61, H. 7, p. 561) has demonstrated that the colostral milk from the majority of cows contains both hæmolytic amboceptor and complement—the former usually for two days and the latter for three to five days at most. He has shown that they are identical with amboceptor and complement present in normal cattle serum, *i.e.*, they have become admixed with the colostral milk by filtration through the vessels.

(Such an admixture in the early days of nursing may possibly explain cases of sudden death in newly born children nursed by eclamptic mothers. See Goodall: *Amer. Jour. of Obstet.*, Jan. 1911, p. 11.)

H. L. M.

On the toxicity of the urine and the serum in eclampsia.

P. Esch (*Muench. med. Wochen.*, No. 9, Feb. 27 1912, S. 461). From experimental injections of the urine and blood serum of eclamptic patients into guinea pigs the author reports as follows:—

The injections were made into the heart cavities and into the main blood stream.

In cases of eclampsia the toxicity of the serum and especially of the urine during labour was established. The poisoning appeared in the form of anaphylactic symptoms. The autopsies of the dead guinea pigs showed the characteristic signs found in animals dying from anaphylactic shock.

The liquor amnii was found to be non-toxic.

During the puerperium the toxicity rapidly disappeared.

The serum poison is identical with the urine poison.

The urine poison has no relation to the specific gravity of, to the degree of acidity of, or to the presence of genuine albumen in, the urine.

The toxicity of the urine was not destroyed by repeated boiling. On keeping, the poison appeared very labile.

A guinea pig which had withstood one shock with urine was not affected for at least several hours by reinjections of urine.

An animal antianaphylactic for serum was immune to urine poison, while, on the other hand, the urine poison was not able to remove an existing serum anaphylaxia.

The withstanding of a very slight (eclampsia) serum shock protected against the injection of toxic urine.

Toxic urine mixed with serum from the same patient or with serum from a normal gravida or with serum from a non-gravida, in equal parts, proved to be non-toxic.

The subcutaneous injection of 0·5 c.cm. of toxic urine in guinea pigs produced no local reaction except some necrosis.

It is evident that in eclampsia we have to do with a parenteral deranged albumen metabolism. The author is not inclined to accept the theory of anaphylactic poisoning, even if the poison excreted in the urine should be found identical with the anaphylactic poison. F. E.

The renal functions in eclamptics.

ZINSSER (*Zeitschr. f. Gebs. u. Gyn.*, Bd. lxx, Hft. 1) has studied the significance of the chlorides in the urine of eclamptics. He found that in the so-called " kidney of pregnancy " there is a tendency to retention of chlorides in the body, and he made observations to find whether eclamptic patients store up chlorides, and whether this retention was a precursor of the outbreak of fits. His observations showed that the retention was greater in œdematous cases than in non-œdematous. He gives a series of charts of the chloride excretion in the urine of eclamptics. Taking the normal percentage excretion as between 0·5 and 1, he shows that 12 cases in which the chloride excretion reading was little or not at all affected, recovered, in spite of many fits—in two cases 39—and other bad clinical signs. On the other hand two cases, in which there was a considerable and prolonged drop in the chloride excretion reading, died, one after 7, the other after 71 fits. Control observations were made in cases of hæmorrhage to exclude the possibility of the low chloride reading being due to loss of blood.

Zinsser believes that in œdematous cases the chloride retention begins in the " kidney of pregnancy " stage, and that in eclampsia there is a further retention The point of practical interest is that the observations appear to warrant the conclusion that in œdematous cases of eclampsia a sudden and prolonged drop in the chloride excretion, for which there is no other clinical explanation, indicates a severe and probably fatal intoxication; and that on the contrary a high chloride excretion permits a good prognosis to be made, even in cases that, clinically, look very severe. R.W.J.

Acromegaly in pregnancy, passing off in puerperium.

MAREK (*Zentralbt. f. Gyn.*, No. 47, 1911) records the case of a primigravida, æt. 26. Her previous history was uneventful, her menstrual history normal. She last menstruated on August 16 1910. In September she consulted a Vienna gynæcologist, who gave her a guarded opinion as to her being pregnant, but apparently noticed nothing further wrong with her. The pregnancy ran a perfectly normal course until the eighth month, when she noticed her gloves and boots becoming too tight for her. Her rings became painful, and had to be cut off with a file. At the same time she began to suffer from pains in the extremities, dullness and somnolence, great thirst, hoarseness, coryza, and polyuria and glycosuria. There was no headache, nor interference with vision.

Her friends were struck with the rapid change in her appearance. The skin of the face became thickened, coarsened, and darkened: the lips and nose thickened. The lower jaw projected so that the lower teeth projected in front of the upper. The skin of the hands, feet and legs was thickened and firm. There was no goitre or exophthalmos. The urine contained sugar, but no albumen. The hoarseness ultimately became associated with angina.

Marek diagnosed " hyperpituitarism," and regarding the glycosuria as a symptom merely, did not treat for it further than by restricting the carbohydrates in the diet.

Labour ensued on May 8th, and she was delivered by forceps of a healthy boy, whom she was able to nurse. On the first day of the puerperium the temperature was 101 and the pulse 128, but it had been quick before labour. Within a few days it fell to 88. The thirst and somnolence diminished, and the features became thinner, and the skin softer. A month later the jaws met accurately, the lower teeth just behind the upper. In July she could wear her rings in comfort, and the sugar had disappeared from the urine.

Marek is of opinion that there is a normal hyperpituitarism in pregnancy, partly owing to the withdrawal of the antagonising secretions of the ovary. The glycosuria was partly due to the increased quantity of suprarenal secretion in the blood in pregnancy. R. W. J.

Tabes in Obstetrics.

FROHINSHOLZ and REMY (*Ann. de Gyn. et d'Obstét.*, March 1912) have a valuable review of this subject. They first draw attention to the rarity of pregnancy in this disease; this may be due to the action of the disease on the ovaries or to the comparatively advanced age at which tabes usually becomes manifest. In a certain number of cases the symptoms of tabes are mistaken for those of toxæmia (viz., gastric crises).

Pregnancy as a rule increases the severity of the tabetic symptoms, but in some cases the painful manifestations of the disease have diminished. The disease has no influence on the pregnancy and any accidents which do occur are more due to the co-existing syphilis.

Labour in a few cases has been painless. The authors give details of a very good example of insensibility of the patient to the uterine contractions. C. W.

Bacteriological observations on fever during labour.

SACHS (*Zeitschr. f. Gebs. u. Gyn.*, Bd. lxx, Hft. 1). This paper is based on a series of 672 cases in Winter's clinic at Königsberg, of which 78 developed a rise of temperature during labour. The organisms found in these cases were as follow:—hæmolytic streptococci 10·4 per cent., anhæmolytic streptococci 23·1 per cent., streptococcus viridans 6·4 per cent., B. coli 7·7 per cent., various 43·6 per cent.; sterile 7·7 per cent. Hæmolytic streptococci were found to cause fever in a shorter time than the other organisms, irrespective of whether they occurred in pure culture or not. Important predisposing factors are placenta prævia, vaginal tamponades, the presence of decomposing blood clots, etc. The interval between the beginning of labour and the onset of the fever is of significance. Six out of eight cases began six hours or more after the rupture of the membranes.

The author also investigates the bearing of intra-partum fever upon puerperal fever. His conclusions are:—(1) The duration of labour after the rupture of the membranes is of much less importance in this connection than in regard to the occurrence of intra-partum fever. (2) The mere occurrence of intra-partum fever is of no prognostic significance for the puerperium. The danger of puerperal fever increases greatly with the *duration* of intra-partum fever. (3) Stinking decomposition of the liquor, and the occurrence of rigors are not necessarily of bad significance for the puerperium: and a high temperature and rapid pulse are of uncertain value in prognosis unless supplemented by bacteriological examination. (4) The occurrence of hæmolytic streptococci intra-partum means treble the mortality in the puerperium. Not a single patient with this form of

organism intra-partum remained free of temperature in the puerperium, and all the worst cases were of this nature. (5) In bad cases due to other forms of organism there is almost always some other factor to be considered such as tamponade, trauma, etc. (6) The occurrence of an organism in pure culture is of bad significance *only* in regard to hæmolytic streptococci. (7) Bacteriological investigation taken along with the clinical signs permits of a much more certain prognosis of the course of the puerperium. (8) The duration of the fever is of little significance except in cases due to hæmolytic streptococci. (9) Of the greatest importance in regard to the course of the puerperium is the conduct of the labour. Infection occurring in cases with traumata is much worse than in other cases. A well managed labour is therefore of greater importance than a short labour. Interference should be avoided as long as possible. In this connection the author thinks that the use of pituitary extract will prove itself of great value.

R. W. J.

Mechanism and Management of Labour in Narrow Pelves.

SELLHEIM, Tübinger (*Volkmann's Samml.*, No. 649, 1912), describes the mechanism of labour in flat pelves and in generally contracted pelves and compares it with that in normal births. He draws special attention to the sliding of one half of the head on the other: so that by this mechanism in a flat pelvis the side of the head lying next the symphysis slides down on the part lying next the promontory while the sagittal suture is brought behind the middle line of the pelvis: similarly in a generally contracted pelvis the occipital end of the head slides down on the frontal and increases the apparent amount of flexion. This is the natural disposition as will be found on forcing a split ovoid, such as the two halves of an acorn, down a tube too narrow to admit the intact ovoid. A corresponding sliding of one bone on another is found in the pelvis itself, where this movement of the iliac bones on the sacrum permits a sinking of the level of the symphysis. This is of importance in treatment, as it can be assisted by putting the patient with her legs hanging—the so-called Walcher's position—or in the kneeling attitude assumed by some Italian women, or by a rocking movement such as is obtained by letting the woman rest on each foot alternately. These movements are illustrated by diagrams. The head is further diminished in size, after engagement is complete, by the expression of cerebro-spinal and other fluids from it.

From the practical and clinical point of view Sellheim divides the cases into three classes: (1) those in which it may be prognosed that a labour at term *per vias naturales* is impossible; (2) cases where it is deemed possible, with or without artificial interference; (3) cases where the labour by the natural passages was considered possible but where the ordinary means of help have failed to accomplish the delivery.

In the first category treatment may be by induction of labour, by enlargement of the passages (osteotomies), or by a cutting operation (classical or extraperitoneal Cæsarean section). No rules are laid down for guidance in choice of operation, but Sellheim emphasises the importance of trying to arrive at an exact estimate of the relation of the head to the pelvis by forcing the head into the pelvis, and of the hardness and plasticity of the head by thorough bi-manual palpation. Is the second category it is important to keep in mind that the object to be attained is not merely the dragging of a child through the passages but the birth of an undamaged child without injury to the mother. The placing of the case in the first or second category will depend on the circumstances of the patient, *e.g.*,

whether she is to be confined in private or with all the appliances available in a hospital. Special warning is given of the dangers of applying forceps to a head lying above the brim of a narrow pelvis.

General advice in the third category is difficult: the risk of infection is so great as in the majority of cases to preclude Cæsarean section, unless by some method of sewing the lips of the uterine wound to the abdominal incision—so-called *fistulous* operation. Sellheim seems to incline to the sacrifice of the child by embryotomy as it gives a reasonable hope of saving mother and child in a subsequent labour.

It must be borne in mind that the narrow pelvis is usually a special manifestation of a general defect. E. H. L. O.

Obliteration of the Cervical Orifice: Missed Labour.

Doléris records this interesting case (*La Gynécologie*, Feb. 1912). The patient had been under observation for some time on account of the transverse position of the fœtus. She was admitted to hospital with slight pain but no signs of labour nearly a month after the expected date of confinement. A few days later fœtal movements ceased and the cardiac sounds were not heard. A month later it was determined to induce labour —six weeks or more after the calculated date—but it was found impossible to pass anything into the cervix which was occluded 5 cm. up. The abdomen was opened and complete hysterectomy was performed. The obstruction at the internal os consisted of muscular tissue supported by fibres of connective tissue and with blood vessels: it was covered on both sides by granulations and there was no mucosa. There was no sign of the formation of a Bandl's ring. It turned out that about three years previously the patient had aborted, the retained and putrid placenta was curetted away and there was inserted a pad of glycerine and creosote. This seems to have been continued for some days and to have been a packing rather than a drain as pus was retained: the creosote was probably too strong. E. H. L. O.

Compression of the Abdominal Aorta.

La Torre, Rome, lays claim in an article (published "without prejudice" by *La Gynécologie*, Jan. 1912) to the introduction of this method of arresting post partum hæmorrhage. In 1908 Momburg of Spandau published his paper advocating the constriction of the abdomen by an elastic band as a preventive of hæmorrhage in certain surgical operations. In referring to this the *Obstétrique* noted that Momburg had not quoted Baudelocque. La Torre points out that the older Baudelocque said nothing about compression of the aorta and that the younger Charles A. Baudelocque took the idea from Tréhan, and in a memoir published in 1831 combated the method though he subsequently adopted it.

La Torre himself first made use of this method in 1875, first compressing the aorta digitally and then, in the same patient, followed this up with a tight bandage. He republishes twelve cases, mostly of post partum hæmorrhage, cured by a tight abdominal bandage, with or without a pad. In one he was enabled to remove an incarcerated placenta without recurrence of the bleeding: similarly he stitched a badly lacerated cervix, and in one case arrested the hæmorrhage in a boy who had cut the plantar artery. The article is chiefly polemic, but draws attention to the value of this method in post partum hæmorrhage, which was introduced in 1797 by Rudiger of Tübingen who compressed the aorta by the hand passed into the uterine cavity. E. H. L. O.

Post Partum Hæmatoma of the Anterior Lip of the Cervix.

KOCH (*Zeitschr. f. Geb. u. Gyn.*, Bd. lxix, Hft. 3) records two cases of this form of trauma. The first occurred in a primipara aged 28, previously healthy. Labour began at full time by the rupture of the membranes, and was short and strenuous, the child being born within five hours of the first pain. Hæmorrhage occurred during and after the birth, and after twenty minutes the placenta was expelled with a large retro-placental clot. As hæmorrhage still continued, a vaginal douche was given, when the vagina was found to be filled by a large smooth dark red tumour. On careful examination this was found to be a hæmatoma of the anterior lip of the cervix. As the covering was intact it was left alone, and the puerperium was not complicated by it. Fifteen weeks after, the cervix felt quite normal.

The second case was that of a 20-year old primipara, previously healthy. The membranes ruptured two days before labour ensued. The labour was short, once it started. The uterus was flabby and bled even after the expression of the placenta, but contracted under the influence of ergot. As bleeding still continued a speculum was passed to view the vagina and cervix, and there was found on the anterior lip a dark red tumour as large as a hen's egg. The covering was much torn and blood was oozing from it as from a sponge. The bleeding was stopped by packing and the patient recovered. At the examination on the tenth day there was not the slightest trace of any thickening or other abnormality of the cervix.

In such cases a diagnosis must be made from œdema of the cervix, but that shews itself before or more usually during labour. The early rupture of the membranes and the *rapid* dilatation of the cervix by the head would seem to be associated with its production. R. W. J.

Death from Pulmonary Embolism in a Case of Cornual Insertion of the Placenta.

CHIRIÉ (*Bulletin de la Société d' Obstétrique de Paris, etc.*, No. 9, Dec. 1911) describes an interesting case of pulmonary embolism occurring in a primipara, aged 36, in whom the placenta was situated at the right uterine cornu. The patient was admitted to the Clinique Tarnier complaining of abdominal pain and uterine hæmorrhage. The bleeding had been profuse and continued on admission to the clinic. Examination showed that the uterus was irregular in shape and that the right cornu was much larger than the left. The former also had a softer consistence than the left horn. On the seventh day after admission, during her morning toilet, the patient suddenly became pale and extremely dyspnœic and died twenty minutes after the onset of the acute symptoms.

At the autopsy a large clot was discovered in the left pulmonary artery. The uterus was of the "Arcuatus" type with a small median ridge on the inner surface dividing the organ into two halves. The placenta was inserted into the right cornu, but the lower portion had been separated from the uterine tissues by a large blood-clot, about the size of a goose-egg. Blood was also present between the uterine wall and the membranes which were involuted into the amniotic cavity. The uterine wall at the insertion of the placenta was extremely thin and measured but 2 m.m. in thickness.

An excellent drawing of the specimen accompanies Chirié's report of the case. H. B. W.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

Section of Obstetrics.

President—Dr. A. J. Horne, F.R.C.P.I.
Sectional Secretary—G. FitzGibbon, M.D., F.R.C.P.I.

Friday, March 15, 1912.

The President in the Chair.

Suppurating Undeveloped Horn of Bicornute Uterus.

Dr. E. H. Tweedy exhibited a specimen of above. The patient complained of pain in the abdomen. She had been previously operated on in London. He ascertained that the abdomen had been opened and an abscess of the tube drained. The wound, however, suppurated, and sinuses afterwards formed in the left iliac region and in the vagina, both exuding fæces. The case was thought to be tubercular. On opening the abdomen he found a tumour communicating with the outer skin by one sinus and with the vagina by another. On the opposite side the uterus, with its attached tube, was seen. On removing the tumour and examining it he found it to be a uterus. The intestines were communicating with it, and fæces passing through. It was a fine example of the one horn of a bicornute uterus.

Dr. Solomons recalled a case operated on some years ago at the Rotunda Hospital, in which, when the abdomen was opened, it appeared as though there were three tumours present. One turned out to be a uterus, the second a uterus and vagina in a state of hæmatocolpos, and the third an ovarian tumour. He would like to know how Dr. Tweedy treated the intestinal condition.

Dr. Tweedy replied.

Prolapse and Pregnancy, with a Note on Vaginal suspension of the Uterus.

Dr. Bethel Solomons read a paper on the above subject, which will be found on page 155 of the March number of the Journal.

Cause and Cure of Procidentia as it occurs in the Parous Woman.

Dr. E. Hastings Tweedy read a paper on the above subject, which will be found on page 136 of the March number of the Journal.

Dr. Jellett, before discussing the subject of Dr. Tweedy's paper, said he would like to have answers to the following questions:—(1) How many cases of Alexandroff's operation had Dr. Tweedy done? Answer, Eight. (2) Am I right in considering that you said that the utero-sacral ligaments are peritoneal folds? Answer, Yes. (3) Does Alexandroff's operation touch the utero-sacral ligaments? Answer, No. Continuing, Dr. Jellett said that he must consider Dr. Tweedy's paper from two points of view. First, had his (Dr. Jellett's) operation for shortening the utero-sacral ligaments anything to say to Alexandroff's operation? Secondly, was Alexandroff's operation more efficacious than shortening of the sacro-

uterine ligaments in cases of prolapse? As to the former of these it resolved itself into a question of whether it was possible to confuse the two ligaments. He feared he could not teach Dr. Tweedy anatomy to help him to distinguish, but, so far as he himself was concerned, he could not see any possibility of confusing the two. One—Mackenrodt's ligaments—ran horizontally along the base of the broad ligament; the other—the sacro-uterine—ran vertically. One was broad and flat, the other string-like. Dr. Tweedy could feel the latter for himself if he passed a finger into the rectum and palpated the back of the uterus, while at the same time he drew down the cervix with a bullet forceps. He thought it a pity that Dr. Tweedy had spoiled a good paper by going out of his way to deny originality to an operation which he had never performed, and had never seen performed. In regard to the second matter, as to which Alexandroff's operation or his was the more efficient, he personally considered that the sacro-uterine operation was so on theoretical grounds. It is easier to support any object by a vertical support than by horizontal supports, because the latter, to give the same help, must be stronger and tighter. He was at a loss to understand Dr. Tweedy's criticism of Wertheim's interposition operation. There was no such thing as exposing the body of the uterus in the vagina. He considered it the best prolapse operation in women past the child-bearing period, provided that when necessary the utero-sacral ligaments were also shortened. He would like to have authority for many of Dr. Tweedy's statements, and particularly for one to the effect that division of the utero-sacral ligaments did not affect the position of the uterus. In conclusion, he asked Dr. Tweedy to do two things when publishing his paper. First, to state openly that his remarks applied to his (Dr. Jellett's) operation, and not to omit names as he had done; and secondly, to state that he had never performed the operation or seen it performed.

Sir Wm. Smyly said he agreed with what Dr. Solomons had said about the danger of complete prolapse in connection with pregnancy: in one case he remembered when the patient had been in labour five or six hours the uterus ruptured. He was not so sure that during pregnancy was a good time to undertake operation, as the stretching of the parts might afterwards nullify the effects. He would prefer to wait until after the puerperium. As to the supports of the uterus he would quite agree with Dr. Tweedy that Mackenrodt's ligaments are the chief support, but he considered that he (Dr. Tweedy) made too little of the other things that go to support the uterus. He had seen Dr. Tweedy perform Alexandroff's operation, and that day he had performed Dr. Jellett's operation himself. Both of them he considered very good, but distinct, operations. He had no difficulty in finding the utero-sacral ligaments and bringing them in front of the uterus. But as to the ultimate result of either he had no experience. Of all the operations for prolapse which he had performed he found interposition to be the best, because it cured the cystocele, which was the most common and most distressing complication.

Professor Smith considered that the argument between Dr. Jellett and Dr. Tweedy as to ligaments was not of as much importance as the question of how best to treat prolapse. A point that struck him about Dr. Solomons' paper was that, supposing a woman to have had a rigid œdematous cervix, and one were called to deliver her with this cervix protruding through the vulva, was vaginal incision the best method? There were a great number of men doing fixations, and he thought it would be well for them to

endeavour to get an idea from their practice if a case was going to go wrong by making an examination during pregnancy. If a case was met with in the fourth or fifth month of pregnancy, and the cervix was retracted upwards and fundus fixed he would suggest operative treatment to separate the adhesion and allow the fundus to go up. He was himself more in favour of Dr. Jellett's operation. There could be no doubt about palpable bands of fibres being felt, and he was with Dr. Jellett in believing that when they are shortened they have a distinct influence in drawing the cervix backwards and tilting the fundus forward. The operation which he usually does is the drawing of the round ligaments through the recti muscles and fixing them there.

Dr. GIBBON FITZGIBBON said that the operation he had been doing was the one recommended by Dr. Tweedy. He did not think that the levator ani was to be so completely ignored as Dr. Tweedy led them to believe, as it is this that goes to support the extra strain on the pelvic fascia, and the uterus is dependent for support on the pelvic fascia. In the operation for procidentia, if one could be sure of the uterus remaining in anteversion it ought not to be necessary to do any interposition of the uterus. He could not agree with Dr. Tweedy in attaching a point one-half inch below the Fallopian tubes down to as near as possible the urethral orifice; this he considered far too extreme, as too much of the anterior wall of the uterus was brought down and fixed to the anterior vaginal wall. In connection with the figures given by Dr. Solomons regarding cases followed up after operation the proportion of abortions appeared to be very great. In any cases that he had done he only fixed about one-third inch above the peritoneal reflection of the uterus, and this he fixed about half-way between the vaginal fornix and the urethra. One patient that had been treated in this way went through a twin pregnancy afterwards quite normally.

Dr. ASHE said that from an anatomical point of view he would consider that Dr. Tweedy was correct in saying that Mackenrodt's is the ligament for the support of the uterus. Mackenrodt had described the ligament, but he considered that Dr. Tweedy was deserving of congratulation for having made use of it.

The PRESIDENT, speaking of the two papers, said that one might be described as practical and the other as theoretical. The cases described by Dr. Solomons were such as might be met with every other day, but he thought it was very seldom that a displaced pregnant uterus is met with that cannot be rectified and supported by a pessary. He would prefer not to operate for the prolapse until pregnancy was over. It had just occurred to him that cases of procidentia were often seen occurring suddenly in young girls from lifting weights or some such cause, and in these instances the procidentia is evidently caused by pressure from above. In dealing with them what ligaments should be attacked? He thought that it was possible that no suspension had occurred in some of the cases referred to by Dr. Solomons.

Dr. SOLOMONS said that before replying to the remarks on his paper he would like to say something with regard to Dr. Tweedy's paper. The chief thing that struck him was that everyone was unanimous in the opinion that there was an operation which could cure prolapse or procidentia, and that the time had come for the abolition of pessaries. In his paper Dr. Tweedy referred to a reply he had received, stating at the time of fixation in a certain case resection of the tubes was done. He (Dr. Solomons) thought that such an operation should not be allowed: in fact,

that such a procedure—viz., resection of tubes in a parous woman—should be regarded as a misdemeanour. The term fixation had been used by some speakers with reference to the statistics he had collected, but suspension had been done, not fixation; and where the former is done there is, as noted in the paper, no danger at all. In the first case mentioned all pessaries had been tried and failed, and the operation was done as a last resort. Abortions had occurred in only two of the suspension cases followed up, as although there were also abortions in four other cases, there were full term babies as well. Referring to the President's remarks he had observed that the case was one in which the cervix was œdematous, ulcerated and prolapsed.

Dr. HASTINGS TWEEDY, in replying, said that the discussion showed that we are possessed of a good operation for the cure of " procidentia." There was very little difference between the operation described by him and that practised by the Master of the Rotunda. In respect to priority there was two years' difference in favour of his (Alexandroff's) operation. The controversy centred on whether the fascia which lies immediately below the sacro-uterine ligaments should be considered as a part of these ligaments or a part of the extra-peritoneal fascia, of which Mackenrodt's ligaments form the chief bundles. In respect to other questions he thought his paper sufficiently answered them. He desired to congratulate Dr. Solomons on his excellent paper, and the brilliant result obtained after his bold and novel operation. He desired also to thank him for the trouble he had taken in writing to sixty patients on whom vaginal suspension had been performed during his (Dr. Tweedy's) Mastership of the Rotunda Hospital. He trusted the publication of these statistics would convince men that they were neglecting a valuable operation.

SOCIETE D'OBSTETRIQUE ET DE GYNECOLOGIE DE PARIS.

By the fusion of various Societies there has been formed a new *Société d'Obstétrique et de Gynécologie de Paris,* to which are affiliated the *Réunions obstétricales et Gynécologiques des villes universitaires françaises.* These latter include practically all the chief towns of France and Algeria, though in the meantime Bordeaux stands out. The *Obstétrique* is the journal in which the transactions will appear and this journal—beginning with the January number, is now issued under the name of *Archives Mensuelles d'Obstétrique et de Gynécologie.* The obstetrical part continues to be under Paul Bar, while Faure directs the gynæcological portion with Auvray as chief editor.

REVIEWS OF RECENT BOOKS.

"Delayed and Complicated Labour." By ROBERT JARDINE, M.D. (Edin.), M.R.C.S. (Eng.), F.F.P. and S. (Glasgow), F.R.S. (Edin.). *Professor of Midwifery in St. Mungo's College, Glasgow; Obstetric Physician and Gynæcologist to the Glasgow Maternity and Women's Hospital, Glasgow, etc., etc.* Glasgow: Alexander Stenhouse; London: Henry Kimpton. pp. 351. Price 7/6 net.

This book, which is written on the author's extensive experience, will be of the greatest value to the general practitioner and student from the fact that every difficulty met with in labour is gone into and the treatment in each case carefully described; this latter point will be of great value to anyone who has not previously had extensive practical experience, as by carefully reading he will be able to carry out many, if not all, of the operations described.

The early chapters deal with the more common causes of difficulty in delivery and their treatment, and are followed by a description of the rarer causes such as contracted pelvis, etc. The author then goes on to deal with the toxæmias and hæmorrhages, and it is especially in the treatment of these that such valuable help is given to the reader, as Dr. Jardine lays down a definite line of treatment (having mentioned the chief methods), whereas most text-books mention all the methods, but do not advise any special one, and so leave the person using the book as a guide undecided. A certain amount of pathology is introduced, some of which does not quite agree with all the latest teaching and the author seems rather to suggest plugging of the uterus in post partum hæmorrhage as a thing to be frequently done, and as this latter operation is not one of the easiest to do and of very little value unless done thoroughly well, possibly from the practitioner's point of view quite so much stress need hardly have been laid on it.

"The Myoma operation in Pregnancy with special reference to enucleation during pregnancy and labour." By GEORGE HARTE. Inaugural Dissertation, Berlin 1911.

This thesis from Bumm's klinik contains an original case of myomectomy without interruption of pregnancy and a very useful summary of German literature on the subject during the past ten years. As is often the case in these dissertations the writer is dependent on German abstracts for papers in other languages, and hence his information on them is both incomplete and insufficient.

The original case recorded is that of a nulliparous woman of 27, who was three months' pregnant and sought advice because of the size of the abdominal swelling and the shortness of breath it produced. On abdominal examination there was a large hard tumour reaching well above the umbilicus, and on bimanual examination several hard masses were found varying in size from that of a plum to that of an apple, and connected with an enlarged and softened uterus. The diagnosis of multiple myomata with pregnancy was made. The abdomen was opened and the tumour turned out. The patient was very anxious that the pregnancy should be given

the chance of continuing and therefore the myomata were enucleated, first a large one and then several small ones. The bed of the tumours was closed with catgut and the omentum stitched down over the uterus. There was a good deal of sickness after the operation—ascribed to traction of the omentum on the stomach—and some slight uterine hæmorrhage which, however, yielded to treatment by morphia and codeia. There was also fever,—the temperature rising to 39·6° C., but there was no evidence of peritonitis and the patient got up in three weeks and was discharged in four weeks from the time of operation,—the pregnancy continuing and the uterus having increased in size from that of a fist to a child's head. The tumours removed were typical hard fibroids, five in number, weighing 1,560, 150, 110, 85 and 45 grammes, together with some subserous fibroid nodules.

Attention is called to the continuance of pregnancy in spite of the number and size of the tumours removed; Bumm thought there was very little chance for the pregnancy and only adopted the conservative treatment at the earnest wish of the patient.

The main part of the thesis is taken up with an analysis of this and 117 cases of conservative myomectomy recorded during the past decade,—by no means a complete list but sufficiently large to form a useful basis for a discussion of the indications and scope of the operation. So far as could be ascertained from the records, 79 of these were cases of enucleation, 33 of simple myomectomy and 4 of morcellement. Of the enucleations, 63 were during pregnancy, 12 during labour, and 4 in the puerperium. Of the simple myomectomies, 30 were during pregnancy and 3 in the puerperium. Of the cases of morcellement 3 were during pregnancy and one in labour.

Tables are given of 49 cases of enucleation, 29 cases of myomectomy and 2 of morcellement during pregnancy without disturbance of the pregnancy; of 12 cases of enucleation and 1 of myomectomy followed by abortion or premature labour, and 12 cases of enucleation and 1 of morcellement during labour. There are also tables of 4 cases of enucleation and 2 of myomectomy during the puerperium and of 5 fatal cases.

The opinions of various operators for and against the operation and their indications, methods and results are quoted and discussed. The most frequent indication is abdominal pain with sickness and general disturbance, the symptoms sometimes being caused by incarceration of the uterus. Occasionally they are severe enough to give rise to a diagnosis of torsion of the pedicle of an ovarian cyst. Other symptoms are the large size and rapid growth of the tumours, and repeated abortion. In labour the indication for operation is invariably the low situation of the tumour and its forming an obstruction to labour, and in the puerperium intraperitoneal bleeding, fever and inflammatory changes in the tumour. The abdominal route is the one generally adopted; out of 66 cases, the operation was abdominal in 50, vaginal in 15 and combined in 1. In all cases the vaginal route was chosen because the tumour was in the cervix or presenting at the os. A very remarkable case of Seligmann's is quoted as showing what can be done to the pregnant uterus without disturbing the pregnancy. In this case a submucous myoma, the size of a child's head, was removed by morcellement from a patient eight weeks pregnant. The bleeding cavity from which the tumour was enucleated reached to the fundus uteri and above the umbilicus. This cavity was firmly plugged with iodoform gauze which was left in for five days and yet the woman went to term.

The writer advocates the conservative myomectomy in women under 40 as the operation of election because the chance of the pregnancy being undisturbed is a good one. In 49 out of 63 cases of enucleation the pregnancy continued, in 12 abortion or premature labour occurred, and 2 patients died. Of 33 cases of removal of pedunculated myomata, in 29 the pregnancy continued, so that even in the less favourable cases abortion occurred in less than 25 per cent. of cases. A deep situation of the tumour in the uterine wall, the large size of the tumour and an advanced stage of pregnancy all seem to increase risks of abortion or premature labour. Intraligamentary tumours seem especially prone to be followed by abortion.

The danger of rupture of the uterine wall through the scar seems to be negligible; of 5 fatal cases in those collected, in 2 death could not be ascribed to the operation as one patient was extremely ill and the other already infected; 1 death was due to hæmorrhage, 2 to peritonitis.

"The Dangerous Age." By KARIN MICHAELIS, with an Introduction by MARCEL PRÉVOST. London: John Lane, The Bodley Head. Price 3/6 net.

This is probably the first occasion on which anything of the nature of a novel has been noticed in this Journal, but there are somewhat special reasons for an exception in regard to these letters and fragments from a woman's diary published under the title of "The Dangerous Age." The book is by a Danish writer, Madame Karin Michaelis, and has been translated into several European languages and, in Germany and Austria especially, has given rise to much discussion. Though it has many points of interest to the medical profession it is not a pleasant book to serve up to the general public for it is the diary of a diseased mind, and contains the mental lucubrations of a woman suffering from climacteric neurasthenia. The patient, for so we may describe her, is morbidly introspective and the only claim of the book to our interest is in her analysis of the events of her past life and her dissection of the emotions they arouse. It is just the sort of case record one would imagine the Freudian school would produce after the long investigation of a patient. And doubtless much of the stir the book has caused is due to its appearing at a time when attention has been attracted to the methods of Freud and his school and the stress he has laid on the sexual origin of many nervous and mental cases, and thus it seems but another instance of the writer of fiction—ever on the look out for some new thing to tickle the jaded palates of a dyspeptic public—turning to the last theory in medicine for an inspiration. Indeed our Danish authoress is only following in the footsteps of her distinguished countryman, Ibsen, of Zola in France and of our own Bernard Shaw. She has many references to women's doctors,—they "may be as clever and sly as they please, but they will never learn any of the things that women confide to each other. It is inevitable. Between the sexes lies not only a deep, eternal hostility, but the unfathomable abyss of a complete lack of reciprocal comprehension." And so on. And yet it is a wonderfully realistic study of a hysterical woman, and for that very reason instructive to all who have to treat the diseases of women.